

This is a digital copy of a book that was preserved for generations on library shelves before it was carefully scanned by Google as part of a project to make the world's books discoverable online.

It has survived long enough for the copyright to expire and the book to enter the public domain. A public domain book is one that was never subject to copyright or whose legal copyright term has expired. Whether a book is in the public domain may vary country to country. Public domain books are our gateways to the past, representing a wealth of history, culture and knowledge that's often difficult to discover.

Marks, notations and other marginalia present in the original volume will appear in this file - a reminder of this book's long journey from the publisher to a library and finally to you.

Usage guidelines

Google is proud to partner with libraries to digitize public domain materials and make them widely accessible. Public domain books belong to the public and we are merely their custodians. Nevertheless, this work is expensive, so in order to keep providing this resource, we have taken steps to prevent abuse by commercial parties, including placing technical restrictions on automated querying.

We also ask that you:

+ *Make non-commercial use of the files* We designed Google Book Search for use by individuals, and we request that you use these files for personal, non-commercial purposes.

+ *Refrain from automated querying* Do not send automated queries of any sort to Google's system: If you are conducting research on machine translation, optical character recognition or other areas where access to a large amount of text is helpful, please contact us. We encourage the use of public domain materials for these purposes and may be able to help.

+ *Maintain attribution* The Google "watermark" you see on each file is essential for informing people about this project and helping them find additional materials through Google Book Search. Please do not remove it.

+ *Keep it legal* Whatever your use, remember that you are responsible for ensuring that what you are doing is legal. Do not assume that just because we believe a book is in the public domain for users in the United States, that the work is also in the public domain for users in other countries. Whether a book is still in copyright varies from country to country, and we can't offer guidance on whether any specific use of any specific book is allowed. Please do not assume that a book's appearance in Google Book Search means it can be used in any manner anywhere in the world. Copyright infringement liability can be quite severe.

About Google Book Search

Google's mission is to organize the world's information and to make it universally accessible and useful. Google Book Search helps readers discover the world's books while helping authors and publishers reach new audiences. You can search through the full text of this book on the web at `http://books.google.com/`

ECLECTIC SCHOOL READINGS

SOME USEFUL ANIMALS



NEW YORK · CINCINNATI · CHICAGO
AMERICAN · BOOK · COMPANY

Educ T 379.03.580



HARVARD UNIVERSITY

LIBRARY OF THE

Department of Education

COLLECTION OF TEXT-BOOKS
Contributed by the Publishers

TRANSFERRED
TO
D COLLEGE
RARY

3 2044 097 029 185



Leo and his Family [*From the painting by Rosa Bonheur.*

SOME USEFUL ANIMALS

AND

WHAT THEY DO FOR US

BY

JOHN MONTEITH, M.A.

AUTHOR OF "FAMILIAR ANIMALS," "LIVING CREATURES," ETC.

AND

CAROLINE MONTEITH

PRIMARY AND ART TEACHER

NEW YORK ·:· CINCINNATI ·:· CHICAGO

AMERICAN BOOK COMPANY

T30.6661
Educ T 379.03.580

April 27, 1903.

Harvard University,
Dept. of Education Library.

Gift of the Publishers.

TRANSFERRED TO
HARVARD COLLEGE LIBRARY
JUN 12 1924

COPYRIGHT, 1903, BY
JOHN MONTEITH.

ENTERED AT STATIONERS' HALL, LONDON.

USEFUL ANIMALS.
W. P. 2

PREFACE

THE subjects treated in this little book are primarily adapted to the use of children in the second and third years of progress in reading, and have in view a twofold object: to assist in nature study and to give aid in the natural and rational method of learning to read. The form of treatment was suggested by actual experience in the schoolroom and in the home circle.

In the progress of information one of the first steps is to introduce the child to nature and to human society; in other words, to the child's environment. The story of animals that are emphatically useful necessarily involves both nature and human nature, inasmuch as it requires the coöperation of animals and men to produce useful results. The point of view is taken in the city, where animal products are more in evidence, and where the larger number of readers is found. The road leading from the products to the sources of production always ends in the fields, forests, and waters. To trace this path from either end is nothing less than a revelation to children both of the city and of the country. Not one child in a thousand realizes where the articles of individual and community use come from, or what industry and sacrifice of life and power are involved in producing them.

As a means of conveying moral impressions, the useful relations of animals furnish a resource especially rich and effectual. The dependence of animals upon human care and their submission and service to a higher power and intelligence impose moral responsibility, and call for the exercise of justice and humanity on the part of their masters and beneficiaries. Moral lessons derived from the actions of animals are to children more vivid and engaging because animals are more ingenuous and dramatic than men in their ways of acting.

As an aid to the young reader in mastering words and sentences, the principle is here recognized that facility in learning to read is best promoted by making interesting knowledge the primary object, and words subsidiary to thought. Historical and geographical allusions passing beyond the experience of the child furnish his teacher or parent opportunities to introduce episodes of story, history, and earth study, which will serve to enhance interest in the subject in hand, and to create a relish for those regular studies yet to come with which animal subjects are correlated.

While the text is fully illustrated by cuts, it is always well to examine the objects themselves when they are attainable.

Acknowledgment is due Messrs. Small, Maynard & Co. for permission to use the poem from "The Wayfarers," entitled "Caravans," by Josephine Preston Peabody.

CONTENTS

	PAGE
A Hunt in the House	9
A Witty Game	13
A Famous Lamb	15
Mary's Lamb (*poem*)	18
Everybody's Friend	19
Little Boy Blue (*poem*)	24
What the Sheep give Us	24
Billy and Nanny — the Goats	29
Our Cow	34
A Little Professor of Cattle	41
Tony finds Cattle in the City	46
The Red Man's Little Deer Cow	53
How Skins are Tanned	59
The Red Man's Big Buffalo Cow	63
The Arctic Man's Deer Cow	69
The Arab's Camel Cow	75
Caravans (*poem*)	79
Our Horse	81
Our Pig	87
Whose Pig is the Elephant?	94
The Bonny Club's Elephant Hunt	101
Wild Dogs	109
Why Jack was a Dull Boy	116
Our Dog	121
Dog Workers and Heroes	128

PAGE

BEARS 133
A BEAR FARM 138
SOMETHING ABOUT FUR 142
A DETECTIVE IN FUR — THE FERRET 145
A TALK WITH A FURRIER 149
SQUIRRELS AND CHILDREN 154
HUNTING THE CHINCHILLA 158
RATS AND MICE 161
MICE AS PETS 165
OUR CAT AND OTHER CATS 167
CLOTHES MOTH AND SILK MOTH 173
AN HOUR WITH THE BEES 179
USEFUL SINGING BIRDS 184
HOUSE SPARROW AND CANARY 190
FOWLS OF THE FARM 196
OSTRICH FARMS 203
ARE ANY ANIMALS USELESS? 207
THE PEARL MAKERS 215
OYSTER AND SPONGE 219
DIVING FOR SPONGES 223
THE DESPISED EARTHWORM 227

SOME USEFUL ANIMALS

A HUNT IN THE HOUSE

I

Are there any animals in the house? Let us see if there are.

The kitten is playing with a ball. She is an animal. She is all alive, and she moves when she wants to.



Our dog, Toots, is sitting on the window sill, looking at other little dogs in the street. He is alive and he can move, for just now he jumped up to the window.

Are these two living, jumping things useful? Mary says they are, because they please everybody with their pretty ways. They love and are loved. It is useful to love and to be loved.



A plant is growing in a pot. Is the plant alive? Yes, indeed. How could it grow if it were not alive? Is the plant an animal? No; it cannot move from its place, as the kitten and Toots can. It is a vegetable.



Is the flower pot animal or vegetable? Why, no; it is neither. It never was alive. It cannot move itself, and it does not grow. The pot is made of clay, which the miner dug from the ground, and the potter molded and then baked in a hot oven. The pot is mineral, like a stone.

II

There are many other things in the house besides the kitten, the dog, the plant, and the pot. All are dead; but some are mineral, and others were once parts of living animals and plants.

What are the chairs made of? They are made mostly of wood that came from trees. The wood in the chairs is vegetable; the nails, screws, and springs in the seat are mineral. The covers of the backs and the cushions may be animal.

II

One kind of chair cover is made of wool. This grows on the sheep's body. Another cover is made of silk. This is woven from fine thread spun by silkworms. Still another cover is leather, made from the cow's skin.

The pillows on the couch may have silk or woolen covers; but the covers are filled with soft feathers taken from ducks and geese.

III

Animals have done a great deal for the furniture of the house. Let us keep on with the hunt.

Turn to the bookcase. The shelves, of course, are vegetable, because they are wooden. The books, too, are vegetable. The paper in them is made from wood. The cloth covers are from cotton and flax plants. The books appear to be all vegetable matter.



Wait a minute! Some of the books are covered with leather. This is animal, too, and is from sheepskin, calfskin, or goatskin. Find a book with the cover nearly off.

Something sticky held the leaves and the cover together. This is animal again; it is glue, and is

made from the skins, bones, and feet of sheep, cows, and dogs.

Open the piano. The black keys are of wood. And the white keys, what are they? They are ivory from the elephant's tusks. Look within, at the wire strings. Are they animal? Notice the soft leather on the hammers that strike the strings. It is sheepskin.

Here is the sheep again, helping the elephant, and the living fingers of another animal, to make music in the house.

IV

What are the carpets and rugs on the floor? Sheep and wool again — all animal. Feel of your outside clothes. Thank the sheep for them. And your shoes? Thank the ox, the calf, the sheep, and the goat for them.

Now, down into the pockets! A purse! You can tell whether the money in it (if you find any) is animal, vegetable, or mineral. But the purse itself is animal. Can you tell why?

Has the pig done anything to furnish the house? On the table there may be a fine book, covered with pigskin. But go to the bedroom, the bathroom, and the kitchen. The tooth brushes, the hand brushes, the scrub brushes, and the shoe brushes are all made of pigs' hair.

The pig is called a dirty animal, but it has done more than any other animal to keep the house clean.

The dining table will make you think of many animals that help the household. These you may hunt for yourself. Then take a pen and write



down the names of all the animals that help to make the household comfortable and happy.

Now ask the ink you are writing with where it comes from. With the help of a pen and three fingers the ink will write: "I come from a gallnut that grows where a little fly stings an oak tree."

A WITTY GAME

Here is a simple game, sometimes played by children, which not only pleases them but helps to

sharpen their wits. The name of the game is "Comey-comey," but nobody knows how it came by this name.

The children are seated in a row or circle. They choose a leader, whom they strangely call "It." Then It thinks of some one thing in the room or out of doors, and the rest of the company are to guess what the thing is.

Each child, in turn, can ask three or more questions, or make as many guesses as the company may order. The one who guesses right is to be the next It. The first letter of the thing to be guessed is spoken by It; and one of the first questions asked is whether the thing is animal, vegetable, or mineral.

The game may go on in this way:—

It (calls out). — Comey-comey!

No. 1. — What do you come by?

It. — I come by *P*.

No. 2. — Is it animal, vegetable, or mineral?

It. — It is animal.

No. 3. — Is it the paper (newspaper) on the table?

It. — No. The paper is made of wood, which is vegetable.

No. 4. — Is it the plant in the flower pot?

It. — No, that is vegetable.

No. 5. — O! I know what it is. It's the pot!

It. — Wrong again. The pot is mineral.

No. 6. (clapping hands) — I've got it! Is it the pen?

It. — Why, no. The pen is mineral.

No. 7. — Dear me! I never can guess the thing.

No. 8. — Is it on the table?



Penwiper of Wool

It. — Yes.

No. 9. — Is it that picture?

It. — No. The picture is paper, and is vegetable.

No. 10. — Is it the penwiper?

It. — Yes. The penwiper is made of wool, and wool grows on the body of the sheep, which is animal.

A FAMOUS LAMB

I

Almost a hundred years ago there lived in Massachusetts a little girl whose name was Mary. Her home was on a farm, and her father kept sheep. When Mary was old enough she attended the village school. The schoolhouse was almost as plain and rude as a barn.

At home, Mary had a pet lamb. She fed it and loved it, and the lamb followed her about like a pet

dog. One day, as she was starting for school, her brother Nate got her to take the lamb along. When the two reached the schoolhouse, Mary put the lamb under her desk. There, the little woolly visitor quietly slept until Mary was called out to recite. Then the lamb trotted after its mistress; and so strange and sudden was the sight that the whole school was in an uproar.



The teacher, Miss Polly Kimball, was amused, and smiled. How could she help it? The children giggled, and laughed out loud. How could they help it? Mary was the only serious one, for she felt very sad. She felt she had done something that was not right.

II

After Mary grew to be a woman, she told how the school got out of this merry trouble over a harmless bit of a sheep.

"It was rare sport for the children," she said, "but I couldn't see anything funny in it. I was too much ashamed to laugh or even to smile at my sheep out on the floor. So I took the lamb out and put it in a shed until I was ready to go home; and I thought I would go home at noon that day."

On that very day when the lamb came out to recite with the class there was a bright young man visiting the school. He was as much pleased as the children were. The next day he rode over to the schoolhouse and put in Mary's hand a slip of paper on which he had written three verses.

III

Some years afterwards a lady in Philadelphia added two verses more. Then the little poem was printed, and went abroad to touch the hearts of thousands of people, young and old. This was long after the lamb was dead.

Yes, Mary's little schoolmate of one half day did not live long. It met a cruel death. It was killed by the horns of an ugly cow. But its snow-white fleece was saved and was made into stockings.

Seventy years after, the stockings were raveled. The yarn was made into rosettes with Mary's name in her own hand attached. These were sold at a

church fair in Boston, and brought seven hundred dollars. So this fleecy lover was useful long after he was dead and gone.

And what became of Mary? She came to be a school teacher, but it is certain that no lamb ever entered her schoolroom. By and by she was married, and then her name was Mrs. Tyler.

She was a great favorite with the children in the town, who called her "Aunt Mary." Mrs. Tyler lived to be eighty-three years old.

MARY'S LAMB

Mary had a little lamb.
Its fleece was white as snow;
And everywhere that Mary went,
The lamb was sure to go.

He followed her to school one day —
Which was against the rule;
It made the children laugh and play,
To see a lamb at school.

So the teacher turned him out,
But still he lingered near,
And waited patiently about
Till Mary did appear.

Then he ran to her and laid
His head upon her arm,

As if he said, " I'm not afraid, —
You'll keep me from all harm."

" What makes the lamb love Mary so ? "
The eager children cry.
" Oh, Mary loves the lamb, you know,"
The teacher did reply.

EVERYBODY'S FRIEND

I

Sheep have always kept close to men, just as the lamb followed Mary everywhere. They are timid creatures, and cannot fight against their enemies.

A sheep is about as large as a Newfoundland dog. But it has no long fighting teeth, as the dog has, and no sharp claws to climb and scratch with, as the cat has. It cannot run up a tree, nor into a hole in the ground.

Some human friend must take care of the sheep. Should a flock of sheep become frightened, all they can do is to huddle together, and then run away, as little girls do when they are scared. If a dog chases them, they can only run, and most likely one of them will be caught.

This human friend must make a pasture for the sheep, where they can be safe and can eat grass. When they have eaten enough grass they want to lie

down and chew their cud as cows do. In winter, they need a shed to keep off the storm, and hay, oats, beans, and turnips to eat. If sheep could talk, they would say to the men and boys, "Now you take care of us, and drive away the wolves and mischievous



dogs that come to steal our lambs and kill us. Then we will give you our wool to keep you warm."

So in the old stories the sheep and the shepherd are always together. The shepherd may be the Hebrew boy David, who killed the lion and the bear that were after his flock. Or the shepherd may be an English boy, like Little Boy Blue, who grew tired, while watching the sheep, and fell fast asleep.

II

Men found it good for themselves to make friends of their woolly neighbors. Long ago, men had their eyes open, and they saw that what was good for a sheep's coat was just as good for a man's coat. Wool is better than cotton or linen to make clothes of, because it prevents the heat of the body from escaping.



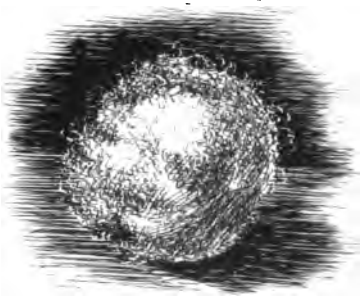
Cow's Hair

It is easy to make cloth of wool. Take a pinch of dog's hair or cow's hair and try to make the hairs stick together. They fall apart because they are so straight. But the sheep's wool is full of curls, or kinks. It holds fast together when it is pinched or rolled. So wool is sometimes rolled into cloth, and the cloth is made into felt hats.



When Johnny's grandfather was a boy, it took a long time and much hard work to get the wool from a sheep's back and put it on a boy's back. In the month of May

the sheep were driven to a brook or pond to have their fleeces washed. When their fleeces were dry, the sheep were sheared. There was no fun in this for the sheep. Each one was held between a man's knees until its fleece was taken off with a pair of shears. The fleece was then sent to a mill where it was combed into long rolls. Each roll was about as big around as a man's finger.



III

When the wool came back in rolls, Aunt Susan got out her spinning wheel. With her right hand she turned a big wheel that turned a little wheel. She put the roll on the little wheel, which spun with a buzzing noise, and soon twisted the roll into yarn.



When one roll was twisted, Aunt Susan pinched another roll on the end of it. After a while she had on the spindle a string of yarn that was hundreds of feet long. This was unwound, put into skeins, and sent to the weaver's, where it was woven into cloth.

But the weaver left the cloth loose and dirty. Then it had to go to another mill, where it was pounded and washed in soap suds until it was firm and clean. After that the cloth was dried and pressed. It was then made into a roll and sent back to the farm.

There was joy in the house when the roll of cloth came from the mill. But the cloth must be made into clothes. So the roll had to take another journey. It went to the tailor, who with his tape measured the father and the boys, and with his shears cut the cloth to fit them.

When the cloth came home again, Mamma, Grandma, and Aunt Susan all went to work and sewed winter suits for Papa and the boys.

But some of the yarn had been left for Grandma to knit into stockings. And Grandma was happy. By the bright blazing fire she sat knitting and singing, while with her foot she rocked the baby's cradle.

Is it any wonder that the sheep and the family were good friends?



LITTLE BOY BLUE

Little Boy Blue, come blow your horn;
The sheep's in the meadow, the cow's in the corn.
Where's the little boy that looks after the sheep?
He's under the haycock, fast asleep.
Will you wake him? "No, not I;
For if I do, he'll be sure to cry."

WHAT THE SHEEP GIVE US

I

Very long ago, before sheep and wool were known, from what did savage people make their clothes? At first garments were formed from the leaves of plants; afterward from the bark of trees. People who lived in cold climates had to kill wild animals for food; and from the skins of these animals they made cloaks to keep themselves warm.

They could not shear the hair of deer, wolves, or rabbits. And if they could, they were not able to spin hair into yarn, or weave yarn into cloth. So they had to kill the animals and strip off their skins with the hair on.



What a blessing is the sheep! It need not be killed to get its fleece. The shears take off the wool and leave the sheep alive. It will be more comfortable in the hot sun without its thick coat, and when May comes again, it will have another fleece.

II

It is hard to think how many a million is; still harder to think of fifty millions. But we have in our great country more than fifty million sheep, and they give us in one year as many as three pounds of wool for every man, woman, and child. If all these sheep had to be killed, what should we do for clothes next year?

The female sheep is called the ewe. She has a fleece to give us, and she also gives milk for her two lambs. When the lambs are old enough to eat grass, the ewe may go on giving milk for her keeper. The male sheep, or ram, often has his head crowned with horns, which roll up in graceful curls.

From its small size and very small legs, one can see that the sheep cannot bear burdens or draw loads.

The sheep has a very little foot with two claws of horn. But its body is round and plump, and gives us mutton for food. When the sheep is killed for mutton, its skin is made into leather.

III

Grandma used to spend a whole week in knitting a pair of stockings. In these days we have machines to spin, knit, and weave the sheep's wool. With knitting machines one woman can make over one hundred pairs of stockings in a day. Other machines weave cloth and sew garments made of cloth.

The wonders of wool are everywhere in the house. It seems as if some fairy with her wand had touched the rough, dirty coat of the sheep and changed the wool into all these useful and beautiful things.

Wool is stuffed into beds and cushions. It is

woven into tablecloths, rugs, and carpets; and made into hats, coats, trousers, waists, skirts, underclothes, stockings, and blankets. It has even been ground up and sprinkled over the wall paper.

Where in the house is the sheep's milk? It is in the storeroom and on the table. It has been changed into the dainty Rochefort cheese. Now we shall see what is done with sheep after they are killed.

The skin without the wool is tanned. It then becomes leather. The flesh is mutton, and mutton forms a large part of the meat we eat. In the city of New York thousands of sheep are used for food every day. They are cut into legs, loins, and chops. There is also a great deal of fat which is melted into tallow. This goes to make candles and soap.

IV

Leather made of sheepskin is passed through a machine which splits it and makes two skins from one. These are nicely dressed and colored. Of these split skins, are made the tops and linings of shoes, doll skins, dog collars, ball covers, purses, bags, and belts.

And what is the shammy skin with which the furniture is dusted and polished? It is thin leather from the sheep. We also have trunk covers, furni-

ture covers, book covers, and gloves—all made of sheepskin. Before paper was known books were written on hard, dry sheepskin, called parchment.

The horns of the ram are not thrown away. So long ago as when David tended sheep, the ram's horn was used for a trumpet to call an army to battle. To-day the horns are turned into snuff boxes and handles, or with the hoofs on the feet are made into glue.

No part of the sheep is wasted. The ears are boiled into glue. The bones are ground into powder which is spread over the fields to make the crops grow. The intestines are twisted into strings for the violin and the guitar.

So the sheep gives us clothes while it is alive, and helps to make music after it is dead.



BILLY AND NANNY—THE GOATS

I

Goats are cousins of the sheep. This means that goats are in some ways like sheep. It also means that they are not wholly like sheep.

In some countries goats are raised in large companies, or herds, and roam in the fields; but in our country they are usually animals of the town. Only two or three run together. Farmers do not like them. So the farm boy knows sheep, but rarely sees a goat. The town boy often knows goats, but does not often see a sheep.



Sheep are timid and are seldom petted. They have no pet names. But goats run about town, and are led by halters, or are tied to keep them from mischief. They slip through the gate into the yard. They even step into the kitchen and turn things over. Girls and boys play with them, hitch them to carts, and call the male "Billy" and the female "Nanny."

They are not so large as sheep. Their bodies are not so round and fat. Their coat is hair, with a little wool under the hair. Both Billy and Nanny have horns, and they are not afraid to use them. There is fun and play in goats, though a long beard under the chin gives them a serious look.

Billy and Nanny have horny hoofs. With these they stamp on the ground, when boys plague them, as if to tell the boys to behave themselves. Having learned what use is made of the sheep's horns and hoofs, it is easy to tell what the goat's horns and hoofs are good for after the goat is dead.

Billy and Nanny eat a little grass, which they swallow without chewing. When they lie down to rest, the grass comes up from the stomach in small lumps. After chewing the lumps fine they swallow them again. For this reason goats, like cows, deer, and camels, are called cud chewers.

Our goats are careless about what they eat. They nibble grass, but they would as soon eat flowers, rose bushes, the clothes hanging on the line, or the clothesline itself. They also relish a bit of newspaper, a bill posted on the fence, an old hat, or an old shoe.

II

It is certain that goats can live where sheep would starve. Therefore goats may be useful in

the town or among the mountains where there is little food. Sheep are dull and stupid. Goats are bright and smart. The mischief they make shows that they may be trained to pleasing and useful work.

While Billy is a kid, he can be trained to perform tricks. A pole is set in the ground, with a bit of board nailed on the top. Billy will run up some steps and stand on the top of the pole, with his four feet in a bunch. Kids are trained to dance to music; to wear bit and bridle; and, as they grow larger, to draw wagons.

In Central Park, New York City, is a beautiful, paved street, shaded by large trees. This street is called "The Mall." Here on any pleasant day may be seen little carriages — very tiny they are — drawn by well-behaved goats.

Some of the carriages have two goats hitched to them, and some have four. All are in harness and are driven just as horses are, with bits and reins. By paying a nickel each, children get a merry ride behind the nimble Billies and Nannies.

There are some good things to say about Nanny. She will fight for her kids and will learn to work, if necessary. But the best thing she does is to give milk. It costs little to feed her, and many a poor family is blessed with her milk. She is a good

friend of babies and sick people, because her milk is so helpful to them.

In Europe the goats are larger than those we see about us. There Nanny is often kept and fed for her milk. She sometimes gives as much milk as a small cow. In some cities she is a walking lunch stand. A little boy draws her milk and sells it by the glassful to people passing by.

In the mountains of Switzerland goats carry burdens on their backs, over steep and dangerous places where horses cannot go. Here the little horny feet do their best work. Here the goats are the only milk givers that can pick a living among the rocks. Here the people have plenty of goats' milk and from it make excellent cheese.

III

There is yet another use for Billy and Nanny while they are living. Their coats may be taken off with the shears, as sheep's wool is shorn. The hair is made into ropes and cloth. The wool under the hair is spun into yarn. The yarn is woven into rugs, shawls, and silky lace.

These finer articles are made from the long, curly fleeces of beautiful goats that live in the colder part of Asia. The shawls are called Cashmere shawls, because that name is given to one

kind of goats. It takes a large family more than a year to make one pair of shawls. But the shawls are worth three thousand dollars. The most beautiful of the silky-haired goats is the Angora of Asia. Thousands of this kind are raised in our country.

Goats, like sheep, are often killed for their flesh. This is not so good as mutton; but the flesh of kids is liked, and is pleasant to the taste.



Goatskin, when prepared with the hair on, is used for rugs. When the skin is tanned into leather, it is firmer and finer than sheepskin. It is called morocco, because very long ago goat leather was made only in the state of Morocco, in Africa.

Morocco is dyed different colors, and is made into slippers, women's and children's shoes, and book covers. Kidskin makes the finest leather and the finest gloves. Two pairs of gloves are cut out of a single skin. To make the leather very soft and easily stretched, the kids are allowed to feed on nothing but milk.

In Asia, a very different use is found for goat-

skin. The skins are pulled off nearly whole from the bodies of the dead animals. Then the holes made by the legs are sewed up.

In this way bottles are made — bottles that do not break. They hold water, milk, or wine. The Turks and Arabs use skin bottles, while traveling, and for their soldiers while on the march.

Now you may make up a report about Billy and Nanny. Set down against them the mischiefs they do. Then make a list of their credits: How many things they do to please people, young and old; how many good things living goats do; and how many useful things come from dead goats.

OUR COW

I

One morning the family had just sat down to breakfast. When Mrs. Burns began to pour the cream into the coffee cups, she said, "Mary, where do cream and milk come from?"

Mary looked up. She was surprised. "Why, I don't know," she said. "Oh, yes, I do — it comes from a bottle. I've seen Jane pour the milk out. The cream is on the top, and she pours that out first."

"Why, Mary!" cried Johnny, "you're a dunce! Don't you know that milk comes from cows? A bottle isn't a cow."

Mary confessed that she must have known this, but had never thought about it before. She blushed a little as she thought how stupid was her answer to her mother's question. Mrs. Burns saw this and said: —

"Not too fast, Johnny; perhaps we are all dunces. Neither you nor Mary knows where half the things we eat and wear come from. I've been reading in the newspaper that most of the children in large cities do not know where milk comes from, and have never seen a cow. Have you ever seen a cow, Johnny?"

"No," answered Johnny, in a mild voice, "I have never seen a cow that I remember, but I've read about cows and seen their pictures."



"So you have," said his mother. "Now tell me how large a cow is."

"She is as large as a big dog," Johnny answered, as if he knew it all.

"Oh, Johnny!" said his mother, "where did you get such an idea? I've been buying books about animals for you and Mary, and now I see I must help the books."

Johnny told how he got his idea. In one of his

books there were two pictures near together; one was of a cow, the other of a Saint Bernard dog. The pictures were of the same size. He had seen dogs of this kind. So he thought a cow was as large as a big dog.

II

The next year after this talk about cows, the Burns family went into the farming country to spend the summer. Before this, the children had always been taken to the seaside, where they saw neither country crops nor country animals.

As soon as they reached Mr. Grant's farm, the children ran to the pasture to see the cows. Tony Grant had gone on an errand, and they could not wait for him to return and lead them.

Johnny wanted to climb over the fence and go among the animals, but Mary said, "No; they have gentle, lovely eyes, but those horns are terrible, and they might hurt us." The children had seen hundreds of horses, and now they found that cows are as large though not so high as horses.

"There!" cried Mary, as they looked between the rails of the fence, "you're as much of a dunce as I. The cow is as big as ten big dogs."

When Tony came home he took his visitors to the yard where the cows were milked. The cows were chewing their cud, and with their long tails

were switching the flies from their backs. Two men and two women sat down by the animals and began the milking.

Before the cows were milked, their udders, now very full, were washed with a sponge and cold water. The milkmaids, while milking, sang songs



to make the cows happy; for cows, if they feel uneasy, often hold back their milk.

By and by the calves were let out of their pens to get a share of their mothers' milk. They wagged their tails to tell how happy they were. And the cows, with their long, rough tongues, licked the hair of their babies to make it smooth and to show their love.

III

When the children returned to the house they found Mr. Grant, wearing a large straw hat, sitting on the porch. Mrs. Burns had told him how little the children knew about animals, and he was ready to talk with them, as soon as they were introduced.

"You see," he said with a smile, "that a cow is bigger than a big dog, don't you, Master Johnny?"

"Yes, indeed," answered Johnny; "as big as ten big dogs."

"Not quite. A large sheep is about as big as a Saint Bernard dog. A cow is eight times as large as a sheep, and twenty-five times as large as a billy goat. You know something of goats. We don't keep them, they are such little rascals on the farm. But you saw that cows are in some ways like goats and sheep."

"Yes, sir," said Johnny; "all eat grass and chew the cud, have horns and split hoofs, and give milk."



"Right!" said Mr. Grant; "but you saw that our black cow has no horns. We call such a cow a 'muley.' You saw, too, that a cow has four nipples on her milk bag; the sheep and goat have but two."

"Do tell us all about cows, please do, Mr. Grant," said Mary. "We've been trying to learn from our books."

IV

"It is well to learn from books," said Mr. Grant, "but it is better to learn from the cows themselves. I can tell you only a few things now. The cow is a wonderful machine. She eats grass and turns it into milk.

"You people in the city must have milk as well as we farmers. You need it for your tea and coffee, and for your cakes and puddings; and above all for the babies to drink. Do you know how many cows have to be milked every day for your great city?"

"No, sir," said Mary, "but I should think a great many hundreds."

"Hundreds!" said Mr. Grant. "Why, it takes nearly a hundred and fifty thousand cows to give your great city one day's milk. It takes a million men and women to milk all the cows in the country. If it rains hard, you may stay at home from school; but the cows must be milked, morning and evening, rain or shine."

Turning to Mary, Mr. Grant said, "I suppose you could get along without sheep for a year, couldn't you? You could wear your old clothes."

"I don't see how we could," answered Mary; "it would be dreadful!"

"Yes, you could, if you had to," said the farmer. "But the people could not get along without the cow's milk for even one day. Not only would the babies cry, but the old folks would cry too.

"In the whole United States there is by count one cow for every four people. This animal is not mine alone, but everybody's — the rich man's cow, the poor man's cow, the old man's cow, and the baby's cow.

"I haven't told you of the butter and cheese made from the cow's milk. Trainloads of these are sent every day to the cities. Shiploads of them go abroad to other countries. Anthony (Tony, we call him) will take you to the creamery where butter is made, and to the factory where cheese is made.

"When I was a boy each farmer made his own cheese. It took all the fresh milk of one farm to make one cheese, which was pressed under a heavy stone. Now, the milk of many farms is taken every day to a factory, where the cheese is made by machinery."

The children had many more lively talks with this clever farmer. Even Tony learned much that he did not know before. And for all the children there were many things yet to learn.

A LITTLE PROFESSOR OF CATTLE

I

One bright morning in October Mary Burns was looking out at the window when she saw, coming up the steps, a boy about ten years old. "Why, if there isn't Tony Grant!" she cried. "Johnny, Johnny! here is Tony!"

Her brother left his bicycle, which he was fixing, and the two rushed to the door. They shook both of Tony's hands and told him how well he looked. Tony smiled and blushed as he said, "I thought I never would get here."

Then Tony, who had never been in the city before, described the hard time he had trying to get uptown. A friend had put him on a street car and told him to get off at One Hundred and Fifteenth Street. He counted the streets crossed, but counted wrong, and stopped at One Hundredth Street. Then he took another car and went ten blocks too far.

"I was frightened when I got off the car," said Tony, "for I thought the wagons and bicycles would run over me. I don't like cities much. They are so noisy and close. I don't see how you can breathe or sleep."

The children laughed, and then Mary almost cried. "You poor boy!" she said, "they ought

never to have let you come alone. Come right in, and we will make you happy. We had such a lovely time at your home last summer."

II

Mrs. Burns soon came downstairs and made the little country boy feel at home. She had invited Tony to visit Johnny and Mary before the pleasant October was gone. The children, she said, would take him to the parks and museums, and show him the ocean steamships.

"And then," she added, "we have been learning and reading about cows and cattle since we came back from your father's farm, and you can help us. You know so much about these things."

"Yes," said Tony, "I know all about cows, but I don't know anything about street cars and cities. I counted a hundred and fourteen streets, and that didn't get me here."

The children laughed again; but Mrs. Burns told Tony that grown people make as great mistakes, and then Tony felt better.

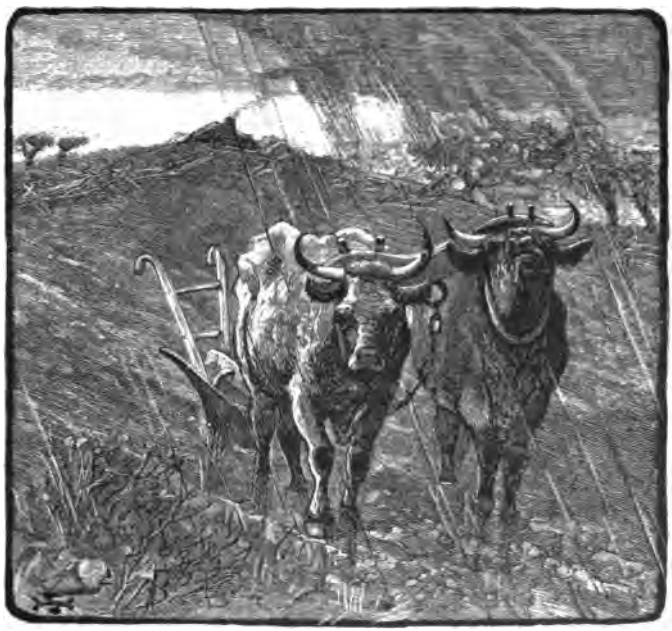
III

At the dinner table, when the soup was served, Mrs. Burns said: "Here, Tony, is something to make you think of cattle. This is ox-tail soup."

"Ox-tail soup!" cried Tony; "I never heard of

such a thing. We don't make soup of cattle tails. The tails always go along with the hides."

"Not always," said Mrs. Burns; "the butchers get some of them. But here comes the roast beef. This is from the cow, isn't it?"



"No, ma'am, I think not," said Tony; "I guess the beef is steer's meat. If the cows were killed for beef, where would we get milk?"

Tony had started a new idea, for his young friends thought both milk and beef came from

cows. Finally Johnny asked, "What is a steer? You never said anything about steers when we were at your farm."

"No, because we haven't any. Why, a steer," said Tony, laughing at Johnny's ignorance, "a steer is nothing but a young ox. You know what an ox is, don't you?"

"Yes," said Mary; "we've been hunting a good deal after oxen."

"And you have found a piece of a young ox right here on the table," said Mr. Burns. "Really, this is a nice little farmers' college, and we have with us a little Professor of Cattle." Tony grew red in the face now, when the children called him professor.

At last, ice cream and lemon jelly were brought to the table. "Surely," said Mrs. Burns, "you must say that something from the cow is coming now." "Oh, yes, ma'am; ice cream is made of milk and cream. My mother makes it for Fourth of July and picnics."

"Is there anything else from the cow or from the steer in ice cream and lemon jelly?" Mrs. Burns asked. "There's sugar and something they call 'extract,'" answered Tony. "But I don't see how there can be anything from the cow in the jelly. There's no milk or cream in it."

"We will let the ice cream and jelly pass now,"

said Mrs. Burns, with a sly glance at Johnny and Mary. Then all went upstairs into the sitting room. Tony felt that there was still something about ice cream and jelly that he did not understand.

IV

Mary played a lively tune on the piano. Then her mother asked, "Now, children, what were you learning about before Tony came?"

"It was about oxen — how they draw heavy loads, and pull plows and heavy logs," answered Johnny.



"That is right," said his mother; "and I told you that two oxen are joined together by a wooden yoke resting on their necks. A long, heavy chain reaches from the yoke to the wagon or plow. Tony, does your father use oxen?"

"No, ma'am; he did work oxen several years ago, but now he uses only horses for work."

"Do you ever use cows for work on the farm?" asked Mrs. Burns.

"Why, no," answered Tony, in surprise; "I never heard of such a funny thing as making cows work."

"Then you have something yet to learn about cows," said Mrs. Burns. "Here are some pictures that will show you how oxen and cows are made to work in Germany and Austria.

"Heavy straps of leather are fastened around their foreheads. The animals pull with their heads. Our oxen pull with their shoulders. Sometimes a single ox is fastened to a wagon. And a cow is often made to work in the same way. She frequently draws a wagon that is loaded partly with her own milk."

The little professor found that he did not know all about cows, though he lived on a farm. But Tony was tired. He had been to see the sights all day long, and was quite ready to go to bed and dream of the cattle at his quiet country home.

TONY FINDS CATTLE IN THE CITY

I

Tony Grant found the big city a real school. Every minute while he was awake he was learning something. Just now, while waiting for dinner, he is standing on the curbstone looking at everything going on in the street.

While Mary is watching Tony, she says softly to her mother, "Mamma, I've been thinking that

country children don't know any more about country things than city children know about city things."

"You are right, my dear," said her mother; "most people know little of the things that are just around them, and we shall soon see how many uses of cattle are new to Tony."

After dinner and a little music from Mary's fingers, all went to the library where Mr. Burns was reading his newspaper. "We are now to learn about cattle after they are killed," said Mrs. Burns. "What is the first thing to be done after a cow or steer is killed?"

"Take his hide off," said Tony, quickly.

"You call a large skin a hide," said Mrs. Burns. "Now what is done with the hide?"

"It is rolled up and sold to a man who takes it to a tanner, and the tanner makes it into leather," said Tony. The little professor was now getting near the end of his knowledge.

"What is done with the hair on the skin, Tony?"

"I don't know. I never thought of that," answered the farm boy. "I suppose they scrape it off and throw it away."

Mary clapped her hands and laughed. "Now, Tony," she said, "we've got the start of you. Look right over there on the corner where that new

building is going up. The other day we saw the men there mixing cattle hair with the mortar which they were going to plaster the wall with. The hair makes the mortar stick together."

"And what is done with the leather?" asked Mrs. Burns.



"Oh, the leather is made into boots and shoes for men," said Tony.

"What are your shoes made of, Tony?" Mrs. Burns then asked.

"Mine are made of calfskin. Cowhide is too stiff for boys' shoes."

II

Just then Mr. Burns laid down his newspaper and, looking very pleasant, said: "I shall have to take a hand in this leather business, for I have a large shoe factory which the children will show you, Tony. I use a great deal of leather. Let me see your shoe."

Mr. Burns felt of Tony's shoe. "When you bought those shoes you were perhaps told that they were calfskin, but they are not, though the leather is thin. They are of cowhide or steerhide."

"How can that be, papa," asked Johnny, "when those hides are so thick? They are used for the soles of shoes."

"That is true, Johnny," said Mr. Burns; "but after the cowhides or steerhides are tanned for leather, they are put into a machine that splits them, as I am splitting this pasteboard with my knife. In this way one thick hide is split into four or five thin sheets of leather."

"Why, papa!" cried Mary, "why did you never tell us this before?"

"Because I never thought you would care to know. Some of the split sheets are made smooth and black on one side for shoes. Some are made rough, or pebbled, and are used for carriage tops. Others are covered with a hard, shiny surface, for patent-leather shoes, and for harness and carriage trimmings."



"Now, Johnny," said Mrs. Burns, "tell Tony some articles that are made of leather."

"Well," Johnny said, "the chair Tony is sitting on is covered with it, and his shoes are made of it. The harness on the horses, and the belts men wear are also made of leather. I think Mary's belt is cowhide."

"No, indeed! Some belts are, but mine is not. It is morocco," said Mary. "And you forgot, Johnny, to speak of the blacksmith's apron which we saw when we were visiting Tony."

III

"Yes, Mary," said her mother, smiling, "and you, perhaps, have forgotten some things too. Leather does a great deal to move the machinery in mills. You know what the chain on your bicycle does. In the same way, in the mills, leather belts help big wheels to turn little wheels. And you, Mary, forgot to speak of Uncle Sam's mail bags."

"So you see, Tony," said Mrs. Burns, "that cowhide in the city is tramping about on a half million feet; trotting on the backs of horses; riding with the carriages, and moving the machines. Leather is almost as lively as the living skin on your cows' backs."

Tony opened his eyes wide, but was silent. He was thinking.

"Now, Mary," said Mrs. Burns, "it is your turn. Can you tell what is done with the steer's body after the skin is taken off? Some day you may have charge of a kitchen of your own, and you will need to know these things."

Mary began to count on her fingers: "The body is cut up into roasts, and steaks, and pieces for corned beef and for soup. Beef's liver, kidneys, and heart are good food. The calves, after their skins are taken for fine leather, give us veal, calf's-head mold, and calf's-foot jelly."

"How about ice cream and lemon jelly?" Johnny asked with a laugh.

"Be still, Johnny! you spoil my counting," said Mary, bluntly. "The nice fat, or suet, is used for cooking. The rough fat is melted into tallow, and all the scraps go for soap. Mamma's grandmother used to make tallow candles. The skins of the bowels are nicely prepared and are used for covering Bologna sausages."

IV

"And now, Master John," said Mrs. Burns, "I will explain your lemon jelly. Calf's-foot jelly thickens itself. But the feet, the skin on the head, and other pieces of skin are soaked and pounded into a paste. When this is dry it becomes gelatin.

This gelatin is mixed with fruit juice, and turns the juice to jelly. A little is put into ice cream to make it smooth and to hold it together. Are there any other useful things that come from cattle?" Mrs. Burns asked.

"Oh, yes, many, many things," said Mr. Burns. "I will leave you to find out all the useful and nice articles that are made of the horns and bones. I see one of them fastening Mary's collar. In South America the cowboys use the cattle's skulls with the horns on for chairs."

"There's the glue in the chairs and furniture," cried Johnny.

"The hair in the plaster and paper of the walls," added Mary. "And look at that horn paper cutter; at that leather music roll on the piano; and at the beautiful cover on this book. Oh, yes, and we forgot the ends of the cows' tails that are used to fill mattresses with."

Johnny was looking out at the window. "Come quick!" he cried. "Look at those men going to their work. Each man has a leather box to carry his dinner in."

"I think I can beat that," said Mr. Burns. "Mary, bring me that box of pills on the mantel. There!" said he, after the box was placed in his hand, "don't you see? Each pill is a box made of gelatin, so that, in swallowing the pill, you don't taste the bitter medicine. Why, the cow even helps us to take our medicine!"

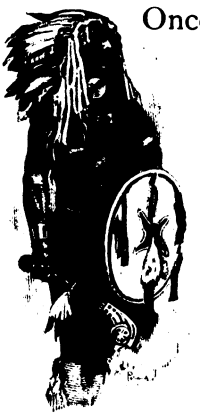
"Tony, you are getting sleepy," said Mrs. Burns. "I hope our cows have not tired you out. I am sorry you must go to-morrow; but you'll come again."

Tony's eyes brightened as he said: "Good night! I never had such a good time in my life. I shall think a great deal more of the cows when I get home."

"And give my kind regards to the cows," said Johnny, with a laugh.

THE RED MAN'S LITTLE DEER COW

I



Once this country in which we live was the Red Man's country. Almost three hundred years ago the first white people came over from England in their little ships. When the white people landed they found they were in a wild country among wild people. These wild people we now call Indians. They had red skins and long, black hair. The land was covered with forests. In these woods lived many kinds of wild animals, such as deer, bears, wolves, wild ducks and geese, and turkeys.

The Red Men could not cut down the trees, for they had no sharp axes. And besides, they did not wish to clear away the forest; for if the trees were gone, the animals would go. These animals gave the Red Men meat and clothes. They had no sheep, no cats, no chickens.

Did the Red Men have any cows? No, they had no cows such as we have. Cattle were first brought to America by the white people. The Indians had no cow's milk for their babies to drink. They had

no butter, no cheese, no ice cream. The women, or squaws, raised little patches of corn. They pounded the grain with stones, and of the meal they made cakes which they baked at the fire.

II

The deer was the Red Man's cow. It did for him almost everything that our cow does for us — everything except to give him milk. The deer was a wild, timid, frisky, jumping little cow. The deer must be called a little cow, for we shall see by and by that the Indian had a very big cow.



The deer's body is not nearly so large as the body of our cow. The common red deer weighs a little more than a large sheep, and is about five feet long and three feet high. Its legs are long and very slender.

The deer's feet are like the feet of our cow, sheep, and goat. It chews the cud, and all cud chewers are useful animals. The female deer — the doe — gives milk for its little one — the fawn — but there is no milk to spare for the Red Man.

Look at the deer's horns. They are like the branches of a dead tree. The cow's horns are hollow, so that they have been used for boxes and for King Alfred's lantern. The deer's horns are solid, like a piece of hard wood or a stone. The male, or buck, alone has horns. The horns drop off every year, and new ones grow.

The Red Man had great need of this small cow, though it was not easy to kill it with a bow and arrow. While alive, the deer did nothing for the Red Man. It could not be made to carry burdens or to draw loads. But when the dead deer was brought home, it was like a store full of goods and made the whole family happy.

Let us see how many comforts the little deer brought to the wigwam in which the family lived.

III

The wigwam itself was partly covered with deer skins sewed together. A hole was left in the top of the wigwam to let the smoke out. Under the hole, on the ground, the fire was built. Around the fire deerskin rugs were spread to sit on.

Bedsteads, a little like our cots, were made of poles. Between the poles fresh skins were stretched. As the skins grew dry the beds became tight. The bed covers also were of hairy skins.

Fine, soft leather was made from the skins. From this leather were cut all sorts of bags and pouches, shirts, and the moccasins worn for shoes. Shells were used for money, and these were strung on a leather belt. Winter cloaks were made from the skins with the hair left on.

The red babies were wrapped in soft furs taken from various fur animals. The cradle was a flat piece of wood, covered with hairy skin. The baby was bound to the cradle with a skin, and looked like a young robin in its nest. By a long piece of skin the squaw swung the cradle on her back, or hung it on a tree to be rocked by the wind.



Red boys would not be boys if they did not play. They played with wooden bows and arrows. The strings of their bows, like those of their fathers, were the cords or sinews of the deer — three sinews twisted into one string. The boys played "shinney," or "hockey," with balls of deerskin and crooked bats of wood. This was their game of golf.

The Red Men needed snowshoes for walking

on the top of deep snow. These were formed of wooden frames, with strips of skin woven across. Shields for turning away arrows in the fight, and drums for the dance were made of hoops with bare skins stretched upon them. The drumsticks were rolls of skin filled with little stones to make them rattle.



Knives, spoons, fishhooks, and needles were cut from the deer's bones. Of the shoulder bones the squaws made hoes and plows. The horns of the deer were shaped into handles for tools; the sinews were used for fishing lines; and the tails were worn for ornaments on cloaks and headdresses.

IV

The deer's flesh is called venison. It is a dainty and costly dish for white people in these days. But venison was the Red Man's everyday meat. The squaws broiled and roasted it over the fire, or boiled it in an earthen pot.

Deer's feet, when boiled, formed a delicious gelatin, which the babies could eat. From the feet glue

also was made, and this was used as a dressing for the red people's hair, and for the shield, to make it hard and smooth.

When the white people came, they wanted many of the good things that come from the Red Man's little deer cow, and the Red Man wanted many things which the white man made. The white people sold to the Indians blankets and guns. The Indians paid for these things with the horns, skins, and meat of the deer, and with moccasins which the squaws made.

By and by the Red Men were driven back farther and farther, and white men hunted the deer with shotguns and rifles. So it has come about that we find in our houses many articles to remind us of the Red Man's little deer cow, once so free and so abundant.

v

Handles for carving knives and forks, and for pocket knives, are made of deer horns. In Europe is found a fine large deer called the stag. Stag horns are there used for umbrella stands, hatstands, and for hanging lamps on. The horns are also cut into ornaments, pins, and bracelets.

Many Indians are still making moccasins and slippers of deerskin, or buckskin, as it is called. With the hair and with beads the Indians work

pretty figures in the moccasins. Our hunters have found nothing better than moccasins to wear while hunting. These shoes are so soft that the hunter can tread over the leaves as quietly as a cat.

Buckskin is not only soft, but it wears well, and is easily stretched. It is made into hunting trousers, tobacco bags, and cases for pocket knives and jewelry; but most of all it is used for making gloves. No kind of leather is so comfortable for the hands that work.



There is a town in northern New York called Gloversville. In this town the making of buckskin gloves began nearly a hundred years ago, and is still carried on.

HOW SKINS ARE TANNED

With the help of a knife, made of a sharp stone or a bone, the Red Men stripped the skin from an animal in the same way as they peeled the bark from a tree. The fresh skin would be a heavy and unpleasant thing to use, because it would soon spoil and decay, or grow hard and stiff. It must be prepared so that it will be dry and soft like cloth.

Changing fresh skins into leather is a great industry among civilized people. First they take off the hair by sweating the skins in a close room and by washing them in limewater — all this is to loosen the hair. Then they use machines for scraping off the hair and flesh and fat. After that the skins are soaked for a time in a liquor made of oak or hemlock bark. In this bark, and in that of some other plants, there is something called tannin.



Great use is made of the oak tan in tanning leather. From its use the skin becomes firm and tight and of a yellowish color. After this treatment there are machines for rolling the skin, polishing it, and putting on a coat of black, if desired. When all this has been done, the skin is said to be tanned and is called leather.

The Red Men made from skins the same kind of leather, but in a simpler way, and without blacking it. These people kept very close to nature. When they wanted a knife, or a hatchet, or a hoe, they made the tool from a stone, or a bone, with very little change. They were not civilized. When we want such tools, they are made from iron and by machines; and this is one reason why we are called civilized.

The busy squaws did all the work, and they seemed to like it. After a skin had been taken from an animal, if they did not choose to tan it immediately, they spread it on a bush to dry. The early settlers in our country used to stretch the fresh skin and fasten it on the outside of the log cabin.

If the squaws wished to tan the skin at once,



they spread it on the ground and scraped all the flesh and fat off with a bone hoe. Or sometimes the squaw would take a piece of wood as large around as a small stovepipe, rest one end on the ground, and press her breast against the other end. Then the raw skin was laid over the wood, and the squaw scraped it with a long bone having a sharp edge. This bone was a rib or the small bone

from the leg of a deer. The ends were wound with dried skin for handles, and the tool was worked like a carpenter's shave or drawknife.

After it was cleaned, the skin was rubbed all over with the brains and liver of the animal, and warm broth from boiled meat was poured upon it. This did for the skin what the oak tan does for our leather. While wet, the skin was scraped with sharp stones and hoes until it was dry. A rope of sinews was twisted and stretched between two trees. Over this two squaws drew the skin back and forth until it was soft.

If the skin was to have the hair or fur left on, the work was done only on the flesh side. But for covering huts, and for leggings and moccasins, the hair had to be removed. So they packed away the skin to sweat it, just as we white people do, and left it until it began to spoil. Then the hair was scraped off with the bone scraper, as the flesh and fat had been cleaned away from the other side.

There was scarcely any end to the rubbing of the leather between the coarse red hands of the squaws. It was rubbed until it was perfectly soft and limber. Leather to be used by the men in hunting and in the outside weather was smoked over a fire of rotten wood. After the deerskin or buffalo skin was completely dressed by the squaws, it was as fine

and nice as the white man's buckskin or bearskin robe.

Do you not think the squaws were almost as bright and skillful, in some ways, as white people?

THE RED MAN'S BIG BUFFALO COW

I

Johnny and Mary sometimes visited the animal garden, which they called the Zoo. There they saw many of the animals alive which they had read about in books.

On one of these visits they hurried to the buffalo yard. The name on the fence was Bison, which is the right name. To the children the huge beast they saw was exactly like the pictures they had seen of the buffalo. They did not like the name bison.

First they looked at the male buffalo — the bull. "An ugly beast," said Johnny. "I don't think so," Mary said; "he is a grand fellow."

"But see those huge shoulders," Johnny replied, "with the long hair hanging down almost to the ground, and that beard under his chin. Then he tapers off so small behind."

But Mary thought his black eyes were bright, and that the horns on the sides of his head were very graceful. She would like to see him wild, galloping

over the plain — he looked so sad and disappointed in that narrow pen.

Now, while these youngsters are peeping between the rods of the fence, and are talking about the lordly bull and the meek-looking cow, let us turn back to the Red Men. To them the buffaloes were real cows.

II

When the first white people came here from England there were no buffaloes near the seacoast. The eastern part of the country was covered with forest trees.

The forest is a good place for the little deer cow, bounding through the bushes and eating buds and nuts, but a bad place for the big buffalo cow. Buffaloes are too large to dodge among the trees and logs. They live in great herds, and must have an open country where the wild grass grows.

When the white people went west to the wild pastures where Illinois now is, they found many buffaloes. At the first sight of them, the white men called them "humpbacked cows." In the far West, beyond the Great River, these animals were also too numerous to be counted. In all the grassy country from what is now Montana to the Gulf of Mexico there were millions of buffaloes.

In the same land of plain and grass were large tribes of Red Men. What brought them there? It was the buffaloes. The Indians could not eat the grass. The little corn and the few pumpkins they raised would not keep them from starving. But they could eat some of these big cattle and get many useful things from them.



The buffalo is more like our cow than is the deer. Once every year the deer's horns fall off and new ones grow. The buffalo's horns, which are hollow, like our cow's horns, remain during life. Buffaloes cannot be made to work, and the cows among them are never milked.

III

The buffalo bull is ten times as large as the common deer. One would think him a terrible foe to meet on the plain; but he is not. He never attacks a man; yet both the bull and cow will fight wolves that sneak about to steal the buffalo calves.

These wild cattle were so numerous and so useful that they supplied almost all the wants of thousands and thousands of Indians.

The wigwam of the western Indians was a large tent, fifty feet in diameter. Several families lived in one wigwam. It was covered with buffalo skins sewed together. One of the skins would spread over as much roof as four deer skins. The hair of the deerskin is short and straight, while that of the buffalo skin is long and curly, giving greater comfort and beauty to the wigwam.

At night the families gathered around the bright fire. The black-eyed babies played with skin rattles. The men smoked long pipes and told fairy tales to the children. All sat on the curly buffalo rugs. They had a jolly time.

The skins were hung on the walls of the wigwam to keep out the cold. The thick hide of the animal's neck was cut into war shields, which were hardened with glue made from the feet. The long

hair of the bull's neck was twisted into ropes. Strings were cut from the hides, and used for tying moccasins and bundles.

A large deer would weigh about two hundred pounds; a middle-sized buffalo, fifteen hundred pounds. Such an animal, after it was killed, made a large mass of meat. It had to be cut in pieces before it could be taken home. Then what was done with it?

IV

Some of the meat was given to the neighbors. Pieces of it were roasted in mud ovens heated by a fire above and a fire below. Chunks of the meat were hung on trees to dry. When dry they were wrapped in hides and buried in the ground for use in winter time.

One tribe of Indians was called Stone Boilers. They boiled buffalo meat in skin pots, heating the water with red-hot stones. The pot of meat was always boiling. It was for all. Anybody passing by could step to the pot and take all he wanted. The Indians had no beggars.

The dried meat was often pounded fine in a hollow stone, then mixed with tallow and packed in a bladder. This was the Indian's food when making a journey. Tallow was also mixed with other food, and was rubbed on leather to make it soft.

wild buffalo and train it to do the work of an ox. This animal gives milk like a cow.

In the central part of Asia, where the winter is cold, there is a wild cow which has very long hair. This cow is called the yak. It is tamed, and furnishes milk, warm skins, and meat. The Hindus use the tail of the yak for a fly brush, and the Chinese dye it red to wear on the hat.

But there are people in the far North who live in the biting, bitter cold, where grass and corn and fruits will not grow. How do they get food and clothes? Some of them live in houses made of snow and ice. For several months in the year the sun shines but little on them. If they are near the seacoast, they may catch fish and large water animals, which furnish them with food and with oil to burn. But these people need a cow.

These short, brown-faced, half-wild people — the Eskimos — live far north of the United States. They have a little deer cow which they call the caribou. It is a wild reindeer. It is smaller than our red deer, and in winter lives on moss, in summer on grass and flowers. Our deer would starve where this reindeer lives and thrives.

It gives the Eskimos no milk, but it furnishes them all that our deer gave to the Red Men. No skin in the world is warmer than the skin of

the caribou. A man or a baby inclosed in a bag of caribou skin may be laid in a bed of snow and will sleep as warm and snug as a bug in a rug.

II

The caribou, so much like the reindeer of Europe, might have been tamed for its milk and to work in harness. But the Eskimos have no desire for milk, and for work they have a remarkable dog.



It is in the north of Europe that the tame reindeer is in its glory. In northern Sweden, Norway, and Russia are a people called Lapps. They are not wild people, but they live much as Indians do. Their houses are built of clay or of hides. There are no other people in the world who get so many necessary things from one kind of animals.

The deer and the American buffalo helped our Red Men only after they were killed. The rein-

deer, however, is of great use to the Lapp while it is alive. It is trained to work with speed, and when so trained acts more like a horse, not at all like an ox.

Look at the Lapp wrapped in reindeer skins and seated on his sled. His reindeer is hitched to the sled by a single strap of reindeer leather, and away he goes, twenty miles an hour. This animal can draw a load of two hundred pounds, besides his master.

Our deer could not do this, even if it were tamed and trained. The reindeer is formed just right for such work. His legs are short and stout. His feet are large, and spread wide when they strike the snow and ice.

Nearly all the wealth of the Lapp is in his reindeer. The animals like to gather in herds, like sheep and buffaloes. A single Lapp may have a herd of five hundred; a very rich Lapp has been known to have as many as forty thousand reindeer.

III

The reindeer herd gives milk for the family. Very little milk is drawn from a single reindeer. But there are so many to be milked! The children have all the milk they want, and there is a great deal left to be made into cheese. The milk freezes in lumps,

and is cut off in slices. Jack Frost makes ice cream without any help.

Could we visit the Lapp's hut, we should find it covered with reindeer skins. These skins have very long, thick hair, which makes them warm for both the reindeer and the people. The beds in the



house are of skins. The carpets and rugs are skins. The women and children are clothed in skins, and the men's clothes, boots, and caps are of reindeer skin.

Both the male and the female reindeer have horns. The Lapp hangs his coat and cap on the horns fastened to the wall of the hut. Knives,

forks, spoons, and handles for tools are made of the horns. Reindeer meat, milk, and cheese are served for breakfast, dinner, and supper. The house is lighted with candles of reindeer tallow.

The sinews of the animal are used for cords and for thread; and when they are split, the threads are almost as fine as silk. The sled standing out of doors is made partly of wood and partly of reindeer bones. The harness of the swift trotter is of leather tanned from the skins of the herd.

IV

It is wonderful that this Arctic man gets so many comforts from one kind of animal, but it is more wonderful that the reindeer is able to give so much. Our cow could not live a month where the reindeer grows fat and is happy.

The Lapp has no pasture of grass. He has no meadow and makes no hay. The reindeer does not like dried food. But the hardy plants, called lichens, that have no roots, grow everywhere. They spread over the barren land in summer, and keep green under the snow in winter.

The snow does not discourage the reindeer. He likes it. He lies down in it and is warm. When he is hungry, he digs away the snow with his nose and feet, and there he finds the green lichens,

which he bites off and swallows as fast as he can. Then he lies down and chews his cud, like our sheep and cow.

THE ARAB'S CAMEL COW

I

The Arab is a dark brown man with black hair and beard. He lives in Arabia where there are deserts; that is, land covered with sand or stones, and without water, trees, or grass.

The Arab lives in a tent, but he is not like the Red Man. He gets his living by trading, not by hunting. To carry on his business he must transport goods across the desert. He has no railroad, and he cannot use a wagon, because wheels do not roll easily in deep sand.



The Arab needs an animal that can carry heavy loads on its back. The camel is exactly such a beast. Look at it — how ugly it is! Ugly things are often useful, however. That hump on its

back is not handsome, but it is soft and tough and strong — just the thing to hang a large or heavy load on.

Though the camel's legs are not so trim and pretty as the deer's, or the cow's, they can hold up the body, even with a heavy load on it. The legs are long and limber, and swing easily back and forth. The camel does not trot; he walks, and in walking takes long steps.

No better feet can be thought of for walking on the hot sand. They spread wide when they strike the deep sand. They have no hard, horny hoofs, but spongy, leather-like pads, that never wear out. The camel kneels when he receives his burden. His knees are also covered with pads of hard skin to keep them from getting sore.



His neck bends upward, and carries the head high. This is very odd, yet it is easier to carry the head in that way. And then — don't you see? — it is better to have the head so high that the nose, eyes, and ears may not fill with sand.

When the wind blows the sand, the camel shuts

tight both his eyes and his nostrils. In this way he is neither injured nor annoyed by the sand storm. And as he glides over the sandy sea, the Arab calls the camel "the ship of the desert."

II

So far the camel is formed just right for his work. He can endure the vexations of the desert. He rather likes the sand, and he likes the hot sun. But how shall this ugly ship sail? By its legs, of course. The wind will not push it; neither will the legs work unless the animal has food and water.

Here is a difficulty. The desert has no grass and no streams of water. The camel must travel a hundred miles over the burning sand. He may have a load of eight hundred pounds on his back, and it will take three days or more to make the journey. Such work would kill either our horse or our ox in a few hours.

The camel has a very large stomach. He likes dry food better than green food. Before he starts on a long tramp he packs his stomach with hay, which swells and grows larger and richer as the days pass. The camel is a cud chewer. When he rests under the hot sun he chews over the food stored away in his stomach.

But when the stomach is empty, what shall he do

for food? The hump on his back feeds him. Long before the journey begins the driver has fed his beast abundantly, so that the hump has grown large and fat. When other food is gone, the fat of the hump passes into the body to keep it strong.

Before starting, also, the camel has taken a long, large drink of water; and this is stored away in many sacs in his wonderful stomach. From these wells the animal draws water to keep his mouth wet.

The Arab's camel is an ox, a baggage wagon, and a railroad all in one. Now we shall see that this strange animal is a real cow and also something of a sheep.

III

The Arab needs a cow to yield milk — for himself and his wife, and for the little Arabs and the pet colt. The female camel is his cow. Her milk is good, though there is no butter in it, and it does not make the babies ill.

These dark-skinned people of the desert wear some clothes of woolen and linen, but they spin and weave the camel's hair. This hair comes to us in dress goods, shawls, and fine paint brushes.

The thick hide of the camel is used to cover the Arab's tent, and, when tanned, it makes strong leather. The camel also furnishes its owner with

meat — rather tough meat, we should think. But the flesh of the calf is tender and pleasant for food.

In Central Asia there is a camel of larger size than the Arabian, and with two humps. It has a much



thicker coat of hair, for it lives in a colder climate. The Asiatic camels are kept in the country for milk and to draw loads. The Chinese use many of these camels to carry burdens.

CARAVANS

What bring ye me, O camels, across the southern desert,
The wan and parching desert, pale beneath the dusk?

Ye great slow-moving ones, faithful as care is faithful,
Uncouth as dreams may be, sluggish as far-off ships, —
What bring ye me, O camels?

"We bring thee gold like sunshine, saving that it warms not;
And rarest purple bring we, as dark as all the garnered
Bloom of many grapevines; and spices subtly mingled
For a lasting savor: the precious nard and aloes;
The bitter-sweet of myrrh, like a sorrow having wings;
Ghostly breath of lilies bruised — how white they were! —
And the captive life of many a far rose garden.
Jewels bring we hither, surely stars once fallen,
Torn again from darkness: the sunlit frost of topaz,
Moon-fire pent in opals, pearls that even the sea loves.

"Webs of marvel bring we, broideries that have drunken
Deep of all life-color from a thousand lives, —
Each the royal cere-cloth of a century.

We come! What wouldst thou more?"
All this dust, these ashes, have ye brought so far?
All these days, these years, have I waited in the sun?
I would have had the wingëd mirage of yonder desert.

JOSEPHINE PRESTON PEABODY

OUR HORSE

I

When we were hunting through the house for everything made of animal matter, there was one thing we did not think of. How were all the goods brought to the house — the beds, tables, bookcases, books, carpets, stoves, clothes, pictures, and the piano?

After Johnny and Mary had looked through the house, they decided that the sheep has given more than any other animal to furnish the house. But when they asked their father, "Which animal is most useful to the house?" he said the horse. When the children asked him "Why?" he said that the horse had something to do with every article in the house, and with every brick or piece of wood that is in the building itself. "You couldn't have a house to live in or any furniture in it, and not much food, without the horse," said Mr. Burns.

And he said further, pointing to a mover's van across the street, which two men were unloading: "A table is not useful so long as it is in the shop. It must be brought to the house before it can really be used for a table."



"Couldn't the men bring the table?" asked Johnny.

"One table, perhaps, but not all the tables in all the houses," the father answered. "Our new country could never have been settled without horses to move the families. There are two horses hitched to that van. The wagon weighs two thousand pounds, and the goods weigh about the same.

"The wagon load has been drawn more than three miles by two horses. Forty men could not move the piano and other goods so far. One horse does as much work as twenty men. Men make

the tables and pianos, but horses draw them to their destination. If men had to do the horse's work, who would make the household furniture?"

II

"Then you forget," said Mr. Burns, "how much the horse does on the farm and in hauling the crops away from the farm to the railroads, and from the railroads to the houses. Horses plow the ground, and move the planting and reaping machines. They do more than the farmers to produce our food."

"And then, papa," said Mary, her eyes very bright —

"Wait a minute, Mary," said her father. "Wait till I finish my little lecture. Oxen are very strong, but very slow. They couldn't begin to do the moving of all our furniture. They are not so intelligent as horses. Horses are both strong and quick, and are easily trained. Besides, they can travel on the hard pavements. Oxen could not do this. Now, Mary, you may go on."

"I was going to ask Johnny if the horses don't bring us everything every day," said Mary.

"Not everything," said Johnny. "The horses don't bring us the newspapers and letters. Neither do they bring our little packages and telegrams. The carriers and messenger boys bring us those."

"But you don't think far enough back, Johnny," said his sister. "The horses, you know, bring us the baker's bread, the milkman's milk, and the grocer's things. They draw away the garbage and the ashes, and everything we want to throw away."

"And you forget," said Mary, "that letters are brought to the post office and that newspapers are drawn by horses to different places in the city, where the carriers get them."

"And you, Mary, forget all the things the show horses and trick horses do," said Johnny.

"There! Johnny, you are just like all boys; you can't see any good in anything unless there's fun in it."

"Well, isn't fun good? Don't the people feel better after they've seen Buffalo Bill's horses and the trick horses in the circus?"

"That is true," Mary said, "and the trick horses show how much horses know, and how willing and patient they are. I like to see the fine horses trotting in the park, but I can't help thinking how they must suffer when their tails are cut off. Horses suffer a great deal to please us and to work for us."

III

Just then Mrs. Burns came in. "Is the horse ever a cow?" she asked.

"Why, no, mamma, that cannot be," said Mary. "The cow has split feet with two toes. She has no upper front teeth. She chews the cud. The horse has a hard round foot with only one toe. He doesn't chew the cud. And the mare gives only milk enough for her colt."

"That is true, generally," said Mrs. Burns. "But there are some countries where the mare is used as a cow. The people in Central Asia use mare's milk. They use it also in Russia, where they make a kind of beer of the milk, and call it koumiss."



"Yes, and horses make good meat, too," Johnny added. "I have read that there are a hundred shops in Paris where they sell horse flesh. A good many people think it is as good as beef."

"Please don't speak of that again, Johnny. I can't bear to think of eating horses," cried Mary.

"But it is necessary sometimes to eat horse flesh," Mrs. Burns said. "The lives of people in a besieged city have sometimes been saved by horse meat. And now let me gather up some things about horses which you have passed by.

IV

"For thousands of years horses have been of the greatest use to people in various parts of the world. They are different in different countries. The Belgian horse often weighs nearly three thousand pounds, and can draw immense loads. A man can lift the Shetland pony. He is very useful, and lives and works well where the large horse would die.



"The mule is half brother to the horse, and does the hard work which the ox used to do. The donkey is half brother to the pony, and carries goods over mountains where horses cannot travel. We do not like war, but it has been necessary. In battle, horses are as brave as their riders and drivers. They do not fear spears or bayonets. They like the noise of cannon, which they draw from place to place.

"Our horse, if well cared for, lives thirty years. How much he does for the family and for business

no one has ever told. But, in one way or another, he must die. His skin is made into leather, which is used for harness and saddles, and sometimes for shoes.

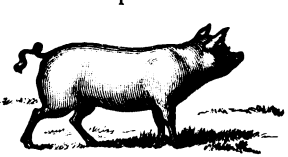
"The long hair—the mane—on the horse's neck and the longer hair on the tail, are woven into hair-cloth, and are stretched on violin bows. Glue is boiled from the hoofs and from bits of the hide. The body of the dead horse usually goes to the soap maker. Johnny's bicycle is easy to keep, it eats but a few drops of oil; but I am sure he would think a great deal more of a fine, noble horse."

OUR PIG

I

"Little Betty Pringle had a little pig.
It was not very little, nor yet very big.
When it was alive, it lived in clover;
Now it's dead, and that's all over."

No wonder that Betty Pringle made a pet of her pig. Little pigs are very clean and very pretty. When they have got from their mother all the milk they want, they frisk about and nudge one another with their noses. The nose is the pig's best tool.



As Betty's little pig grew larger, she put it in a clover field, where it could eat the green grass, and the sweet red flowers from which the bumblebees suck honey. When it became a big pig, or a hog, it was not so pretty and interesting. It was then killed for its flesh.

That is the end of all our pigs. They live awhile, and are happy in clover. Then they are fed on corn, grow large and fat, and are killed for food.

The grown pig is about as large as a sheep, but not so high. Its coat is hair — stiff and coarse, sometimes. It eats grass, but does not chew the cud. Its feet have split, horny hoofs, like the sheep's feet.



Pigs in their wild state are called wild boars. They are ugly, fierce brutes, covered with stiff hairs. The head of this animal is large, the nose long, and two long, sharp teeth turn up from the sides of the jaw.

The wild boar is found in some forests in Europe. He tears up roots with his tusks, and he eats the roots and worms which he finds in the

ground. Our tame pig, when it is not fed, uses its nose for a plow, following the example of its wild forefather.

II

Thousands of years ago, the people of Egypt used their pigs for plows, and to plant and shell out their wheat after it was ripe.

Our farmer turns over the ground with a steel plow drawn by horses. Then he makes the ground fine with a harrow, which usually has iron teeth, like the teeth of a comb. After that, he sows the seed and rakes it in with the harrow. The Egyptians at first had no plows or horses. They used their pigs for plows and for horses.

Once every year their great muddy river overflowed its banks, as it does to this day, and covered the land with mud, in which were many water animals. When the river went back into its channel again the fields were dry. Then the Egyptian called his pigs together by blowing a shell horn, and turned them into the fields.

The pigs were happy, for there was a feast before them. At once they put in their noses and began to plow for wriggling worms and fishes. Soon a large field was plowed by the noses and harrowed smooth by the feet of the pigs. The pigs were called off, and the seed wheat was sowed over the

field. Then the seed had to be covered. Here was a puzzle.

The Egyptian wants the feet, but he doesn't want the noses this time. While the pigs could harrow in the seed with their feet, they could also, if turned into the field with free noses, eat up all the seed. So the Egyptian caught every pig, and tied a basket, or muzzle, over its nose. Then he turned the whole herd into the field.

Then there was trouble. The pigs could see and smell the wheat, but could not eat it. Half crazy, they scampered over the whole field, and thus trod in and planted the seed.

After the crop was grown and ripe, the straw with heads full of wheat was spread on a clean piece of ground. Again the pigs, with their noses muzzled, were turned on to thresh the grain with their feet.

"Why didn't the stupid fellows lie down and go to sleep, when they found they couldn't get any wheat to eat?" Johnny asked.

"Because," answered Mary, "there were men there to whip and poke up the poor fellows, and keep them going."

III

Our pigs are not fitted for trained work. The work they do is to change the corn we feed them

into flesh, which we eat. They have little chance to root or plow with their noses, and so their noses have become short for want of use. Pigs often kill harmful snakes. The poison of a snake does not hurt the pig. In China the female pig — the sow — is made use of for her milk.

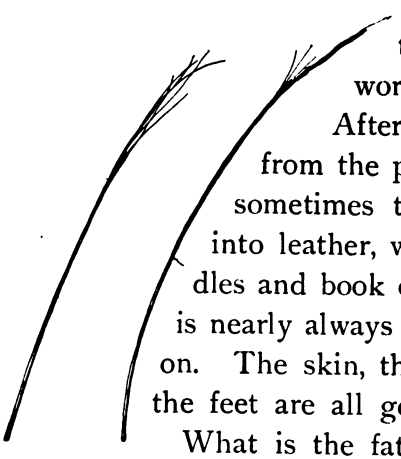


Our pigs are kept to eat and to be eaten. This is the reason why there are so many. For every two people in the whole country one grown pig is counted.

The first useful article taken from the dead pig is the stiff hair, or bristles. Watch the shoemaker as he sews his shoe. The needle at the end of his thread is a pig's bristle. The best bristles

for the shoemaker come from Russia, where the animals run in the woods. The hair of our pigs is softer and more curly, and is used for stuffing saddles, cushions, and beds.

For coarse brushes, bristles are brought from Russia and Germany. Fine white bristles come from France, and are made into brushes for artists.



So the pigs do something to make the world clean and beautiful. After the hair is scraped from the pig's body, the skin is sometimes taken off and tanned into leather, which is used for saddles and book covers. But the body is nearly always dressed with the skin on. The skin, the head, the ears, and the feet are all good for food.

What is the fat of the steer called? The fat of the pig is called lard. It is used to fry other meats, and in cooking pies, cakes, and potatoes. The cook could not get along without lard.

The pig is a great blessing to our farmers, even though he does squeal, and sometimes roots up the grass and potatoes. The farmers raise immense quantities of corn, nearly five times as much corn as

they do wheat. The people could not eat so much corn; the railroads could not carry it. So the farmers feed a large part of this grain to the pigs, and in this way turn corn into pork.

IV

Fat pigs are sent to market alive. They are packed in a car as close as crackers in a box. Of course, they do not like the trip. They are so fat that they get very hot and tired. Every pig thinks the one next to him should get out of the way and give him more room. But the next one cannot move away. So they all grunt and squeal.

The railroad men have a tender spot in their hearts for these suffering passengers. Once in a while the train makes a long stop, and the water-hose is turned on the miserable prisoners. Then, for a time, there is some rest and quiet.

At last the travelers arrive at the great slaughter-house of the pork packer. They are glad to get out of the dirty cars. Little do they know what is before them, and for this we are glad. The end of them is like that of Little Betty Pringle's pig: —

"Now it's dead, and that's all over."

WHOSE PIG IS THE ELEPHANT?

I

Mary was startled when her mother asked, "Whose pig is the elephant?"

"Why, nobody's pig," she answered. "It isn't a pig at all."

"It is in some ways like a pig, my dear. You know that the reindeer is not exactly like a cow, yet it is both a cow and a horse for the Lapp."

"Yes, mamma, but we eat pigs, and I am sure no one eats an elephant."

"Of course, my dear, no one person eats a whole elephant, for one of these creatures, when grown, weighs seven thousand pounds. But we are told by a wise man, who lived two thousand years ago, that the black people in Africa lived almost wholly on elephant's flesh."

"But the elephant doesn't look a bit like a pig, I am sure," said Mary.

"Not very much like a pig, it is true," said her mother. "But the nose is the main tool of each; and the noses are very much alike, only the elephant's is twenty times as long as the pig's.

"You did not notice that the pig has a moving lip, or finger, on the upper edge of its nose. The elephant's trunk ends in a much longer and more

complete finger, so delicate in its touch and grasp that it can pick up a nut or a pin."

"I never thought of that," said Mary.

"The elephant's nose is used for many more purposes than the pig's," her mother continued. "It is used as a hose with which the elephant draws up water and throws it into his mouth for a drink, or over his body for a bath. He also uses this long tube as a trumpet to make a noise with; and for that reason it is called a trunk."

Thus far Johnny had listened attentively to what his mother and Mary were saying, without putting in a word. He was thinking; and now very bluntly threw out a question.

"It is all right," he said, "to say that the elephant is a pig for the black people in Africa to eat, but of what use are his tusks and trunk to anybody but himself?"

"A bright question," replied his mother, "and I am glad you have asked it. You seem to think that it is interesting to examine the tools which animals have for getting their food, and the weapons which they defend themselves with. There is no tool in the world more curious than your hand. Double it up into a fist and it may hurt somebody; train it rightly and it may button your coat, pick up a pin, or write your thoughts.

"But your hand has something to do with your life, and the elephant's trunk and tusks have something to do with his life. This is why we find the tools and weapons of animals so interesting.



Now I am going to tell you how they are useful to men.

II

"You can easily see that it is of great advantage to some people that the elephant is so large. He can carry on his back a weight of goods heavier than a dozen horses can support. So, for thousands of years he has been very serviceable to

the people in India, the Hindus, because he is so large and powerful. He has been their passenger train and their freight train. Do you see the point, Johnny?"

"Yes, but what have the trunk and tusks to do with the elephant being so large? It seems to me that these things are good for nothing but to fight with."

"Now you will learn something, my boy. This large and powerful animal would never have lived to serve the Hindus, or any other people, if he had not those strong tusks to help him get food, and to fight his way among other big and ferocious animals, like the rhinoceros and the tiger. When his food is provided for him, and he has no more need to fight, he can use these tools for the good of others.

"The elephant's trunk is not a fighting weapon; it is a feeding tool. If so huge an animal, standing up so high in the air, had a neck long enough to reach the ground, it could not support those great, heavy tusks; and the tusks would be badly in the way if this beast had to eat grass like a buffalo.

"The long trunk, able to feel and smell, reaches to the ground and to the branches of the trees — opposite places, wide apart, where the elephant gets his food. So with this tool, stronger than a

giant's arm, as flexible as a worm, and as delicate as a lady's finger, this great beast can break down the branches of trees, or pick up a berry or a nut in his path.

"The tusks and trunk, therefore, are necessary to procure the immense quantity of food which goes to



build and to sustain the elephant's huge body. But is it not wonderful, Johnny, that so mighty a beast learns to obey a little dusky-faced man, called a mahout, who sits like a fly on his thick neck?

"He will pick up a needle with the fingers at the end of the trunk, if the mahout tells him to. Or he

will work all day long carrying logs with his trunk if he is commanded to do so. It is true that he sometimes gets sulky, and loses his temper, but so do men and boys when they have to work hard and long. But you see that the trunk, which is necessary for the elephant's life, is almost as useful to men."

"It is very wonderful," answered Johnny, changing his tone and manner; "I never knew all these things before."

"There are other things, quite as remarkable as carrying logs, which this obedient animal does with his trunk. I have read an account, written by a military officer in India, telling how the mahout chains his big servant by the hind legs to a tree, and then lays the baby down under his trunk and tusks to be tended.

III

"The elephant seems to enjoy being a nurse. With his trunk he picks a leafy twig from the tree under which he stands, and with this brushes the flies from the baby's face. If the little fellow should roll too far away, the long trunk reaches out and lifts it back as softly and tenderly as a mother's hand.

"Elephants never showed how great they are so well as they did in the grand parade of the olden

times. Then they might well feel proud, dressed in splendid trappings, and bearing kings and their attendants on their backs. Long lines of them were marched with armies on the battlefields. The elephants were then made to blow their own trumpets; and the enemy, seeing such magnificent soldiers and hearing the awful noise, sometimes fled without joining in battle.

"Now I will tell you something about the elephant's tusks. It was necessary for the elephant himself that his tusks be made of the very strongest material. Bone, like the bone in a horse's leg, would not do; it would break too easily. The kind of stuff so much needed in the tusks for the elephant's own use is quite as valuable for our uses. So I want to show you in how many ways these strong, fine, and smooth weapons, when cut into various useful and beautiful articles, have helped and are now helping the people of the world."

"O mamma," broke in Mary, "don't tell it now. We've arranged for the club to take up that subject at our next meeting, and it's going to meet in this very room."

"No, no, mamma, please go on," said Johnny. "I'm all stirred up about this business, and I want to hear the whole story now."

"Not now, I think," said his mother, before Mary

had time to press her desire. "I had forgotten that Mary had told me her plans. It will be much better for the children to tell the story themselves. Then I may help them a little."

THE BONNY CLUB'S ELEPHANT HUNT

I

So it came about that the children's club met at the home of Johnny and Mary Burns. A merry company was this club. It was composed mostly of children whose parents were neighbors or friends.

The club had been formed to help the members to work well and to play well. The exercises consisted of games, plays, music, story readings, and compositions on interesting subjects, such as animals and plants. The object was to have a good time. Hence it was called the Bonny Club.

Nearly all the members were younger than their President. Mary Burns had been elected President because she was older than the other members of the club, and further along in her studies. She knew a great deal, because her mind was hungry for knowledge, and, besides, her mother had given her help at home. Mary was a dignified little woman, whom the children trusted.

After the meeting at Mary's home was called to

order, the President gave notice that there would be a hunt throughout the house for articles of use that were made from any part of a certain animal. They would first try to guess some particular thing in the room by playing the game of comey-comey. Then they could get the name of the animal from which the article had been derived.

The first duty was to choose a leader, the It of the game. The President was surprised and not a little embarrassed when the members all voted that she should be It. She could only return thanks, and take her place in the midst of the circle.

So the game began. Mary had the secret in her mind, and in answer to the first question asked, she said the name of the article to be guessed began with the letter p. The next question brought the answer that the article was animal, not vegetable or mineral. Then each member in turn made a guess, but not one guessed right. All were eager to hear what It would say.

"The paperknife!" said Mary, loudly, taking the thin, white thing from the table. Some exclaimed that it was mineral, like any other knife, because it was hard. But Mary claimed that it was made from part of an animal; and fearing that her brother would rashly close the door to further guessing, she hastily asked, "What is the animal?"

Just what she feared happened. Johnny could not keep still, and he rather rudely cried, "I can settle that question; the animal is the elephant, and the paperknife is made from his tusk. It is ivory, and ivory is not mineral."

The case now grew more interesting. One



An ivory market, Zanzibar

thoughtful girl said: "The name is of two words, and you gave us only the first letter of one. I think it should be p.-k."

II

It was well that Mrs. Burns had slipped into the room while the play was going on. She is now looking in the dictionary, and the eyes of all the children are turned toward her.

Putting aside the book, Mrs. Burns said: "I am sorry that your pretty game failed. Wiser heads might have stumbled over the question whether 'paperknife' should be two words or only one, like 'penknife.' The dictionary says it is printed both ways. This shows that in our play, as well as in our work we must mind our p's and q's — or k's — as the case may be.

"Is the paperknife animal or mineral? This is a more important question, and shows that you must have sharp eyes, and do some sharp thinking. Things are not mineral because they are hard. The black keys of the piano are hard, but they are of wood. Is wood mineral? The elephant's tusk was once alive. Didn't it grow, as the bones, and skin, and hair grew?"

The children were all satisfied now, though they were to make other mistakes. They examined carefully the paperknife, and many other articles on the table, — articles that appeared to be of ivory; for Mrs. Burns had placed in sight every ivory thing which would not be injured by handling. Then the elephant hunt began with a rush.

Cuff-buttons, a box of them, were turned out on the table. "Here's the elephant!" was the cry, as one and another picked up a button. From the other side of the room a little girl ran her fingers along

the keyboard of the piano, and echoed back, "Here he is!" In another place was grandpa's cane, with an ivory head, and again the shout went up, "Here he is!" and still again, when an ivory-handled umbrella was spied.

Sitting down at the table, Mrs. Burns said: "Now let us look at the buttons. Are you sure the elephant is in all of them? Are they all of ivory?"

"They must be," replied some of the children, "for the stuff they are made of looks just like the paper-knife."

"Bring them here, please, and let me see," Mrs. Burns said. But before the buttons were returned, a little boy found on the mantel a small Chinese idol, and cried out, "This is the elephant, sure!" The boy brought the little ivory god to the table, and there was an uproar of laughter.

Now the heads crowded as thick as they could around Mrs. Burns, who compared the paperknife and the idol with the various buttons. "I fear you have been too hasty," she said, "and some of your game is not elephant. You have not looked closely and carefully. If your eyes do not do their work well, your minds will go wrong. Look again and see if some of the buttons are not cut and polished, while others are cast in molds."

III

She showed them how smooth the substance in the paperknife and in the idol was; how delicate were the curved lines in its surface; and how soft was the color—not pure white. "Notice the difference," she said, "between the paperknife and this bone button, which has no shaded lines and is as blank as white paper.

"And here is another, a very pretty button indeed, with colors that change as you turn it to the light. This button is made of pearl taken from a certain kind of clam shell. Here, too, are some porcelain buttons. They are mineral, like the material of some dishes in the china closet. Look at this button; it is not ivory, though it looks very much like it. It is hard, too, but it is made of cotton, and is vegetable. The material it is made of is called celluloid."

More and more of the elephant game was gathered and brought to the table. There were crochet needles; there was a penholder, and a cardcase. Boxes of checkers and chessmen were opened, and a box of billiard balls.

"How is this?" asked one and another of the members. "Some of the balls and men are red and some are black?"

After explaining that ivory is often dyed different colors, the President, opening the door, said the hunt would be taken into the dining room. The children, eager to see what more of the elephant could be found, followed their leader with lively steps.

They gathered around the table, which seemed to be loaded with something covered out of sight under a cloth. Suddenly, Mrs. Burns and Mary lifted the cloth away, and a picture met their eyes which threw the whole company into laughter and cheers. "Here *is* the elephant!" they exclaimed.

And so it was. An elephant from the candy shop stood up in the center of the table. It had great ears, a trunk, and tusks. And around this sweet elephant, solemn and dumb, waiting for orders from the mahout on his neck, were cattle, sheep, goats, pigs, and deer, with other elephants.

All this silent menagerie had come from the baker's oven. The oven had added nothing to the beauty of the figures as they were when they left the baker's hands. Legs, noses, ears, and tails were swollen out of all proportion. It was just as well so; for in a few minutes the whole menagerie, except the candy elephant, had disappeared.

Mrs. Burns withdrew to the library while Mary pointed out on the sideboard some remains of the

real elephant. There were knives and forks with ivory handles, mustard spoons, and medicine spoons. Afterward, the door was again opened, and the company returned to their meeting room.

Here the table was spread with a new and more costly display of ivory. In this collection were rare dominoes and dice; scarf pins, on which the forms of deer and other animals were carved; boxes for jewelry, with covers on which flowers and faces were skillfully painted. These had been brought from Europe, where many people get their living by carving in ivory ornaments.

A book with ivory covers was taken from its case. Johnny showed his uncle's flute, the first joint of which was of polished elephant's tusk. His mother spread open an elegant fan. The sticks of the fan were of ivory, beautifully carved.

Then, to close the exercises of the Bonny Club, Mary proposed a riddle to be guessed: "It takes three animals to get music from the piano," she said. "What are the three?"

"The elephant in the white keys," many voices answered together.

"I've got another," cried the little boy who found the Chinese idol; "it's the sheep, the sheepskin on the hammers."

"That makes two," said Mary. "But listen!

You don't hear any music. What is the third animal?"

For a few moments the children were silent. They were racking their brains to think of the third animal. Meanwhile Mary carelessly sat down to the piano and struck the first strain of a familiar air.

In an instant the children rose to their feet, clapped their hands, and shouted, "The third animal is——"

But any one can guess what the children said.

WILD DOGS

I



The wolf and the fox are among our earliest animal acquaintances. The old stories, like the story of Little Red Riding Hood, tell of them. The wolf wants to eat up somebody. He is cunning in his wolfish way. Read the fable of the Fox and the Raven. The fox is trying to steal something. He is both cunning and deceitful.

There has always been trouble between wild dogs and civilized people. These people have

as much as said: "You dogs are rascals and robbers. You get in our way. You steal and kill our sheep and fowl. Away with you!"

Could the wild dogs speak and plead for themselves, they would reply: "Not so. You are in our way. This was our land long before you came upon it. We are not robbers. We take only what we claim belongs to us. We had in our forest home deer, squirrels, rabbits, and ground birds. You have cut down our trees. You have made fields of corn in the place of our woods, and pastures for sheep and yards for fowl on our hunting grounds. You drive away our squirrels, rabbits, and ground birds, or kill them for yourselves. We are hungry, and we are flesh eaters. Look at our swift legs and sharp teeth. These are our only weapons, and we have the cunning to use them. We cannot live on grass and grain. If you take away our deer and rabbits, we must eat your sheep and chickens."

Then the white people might say in reply: "You speak well, Messrs. Wolf and Company. But what you say for yourselves we may say with equal reason for ourselves. We, too, are animals, and have as much right to the land and its creatures as you have. The earth is our mother as well as yours. You have the right to kill for food and so have

we. You kill and drive away weaker animals that are in your way, and if you are in our way we must kill and drive you away.

"You need not show your sharp teeth to prove your right, for we can show you our knives and guns and traps. You kill because you are flesh eaters. We kill also, and take the land because we are both flesh eaters and plant eaters.

"The land belongs to those who make the best use of it. You want the trees to shelter your game; but we want to make houses and ships for animals with brains, and for these we shall keep sheep and cattle and raise corn on the cleared land. You are cunning, but we are wise."

II

The wild dogs had little trouble with the Red Men. Except for small patches of corn and pumpkins, these people delighted in leaving the land wild. They would shoot a wolf and make a coat or rug of his skin, or catch a fox and wrap the baby in its fur. They learned cunning from these animals. They saw packs of wolves working together to catch deer. Part of the pack would lie in wait while another part would drive the game to them. The Indians learned to use the same tactics in hunting and in war.

These wild dogs, or flesh eaters, have done a great deal in the past to improve other animals and to help men. They kept the plant eaters stirred up and active. In this way the deer were made swift of foot, and the ancestors of horses, cattle, and sheep were driven out on the plains where they improved in form and size.

The small plant eaters, with chisel teeth and digging claws, such as the rabbits and the mischievous prairie dogs, followed the horses and cattle. There was danger that these small eaters of grass and roots would destroy the food of larger grazers, the most useful of all animals. Where a single young one was born to the horse kind and cattle kind, a dozen young rabbits or prairie dogs were produced.

It was well for wild horses, cattle, buffaloes, and deer, that the flesh eaters were always prowling about their feeding grounds, waiting to catch a young calf, or a disabled grazer. The sly foxes picked off the rabbits near the wooded land; the coyotes, or prairie wolves, about the size of sheep dogs, roamed afar on the plains; the large, gray wolves went far and near — all hunting and killing off the little destroyers of the grass. So the wild dogs have been of great service to both the Red Man and the white man.

In the forests, and on the plains, thousands of animals of every kind fall dead from old age or accident. What becomes of the dead bodies which, if left to decay, would spread disease? Why, the flesh eaters attend to that business, and they do their work quickly and well.

Eagles and buzzards, those large flesh-eating birds, give some help, though they leave the bones. The wild dogs clear the ground even of the bones. They are the cleaners, or scavengers of the earth. In the old world are the ugly, doglike hyenas, and the sprightly jackals, which are like our prairie wolves. These have remained among the crumbling ruins of old cities and along the path of camel caravans. They make haste to remove the bodies of camels and all other animals that fall by the way.



III

Some things about their bodies help the cunning work of the wild dogs; for they risk their lives when they set out to catch and kill. One of these helpful things is the color of their coats. The color

also makes their fur more valuable to men, as we shall see.

Of what use to the large wolf is his gray color? It makes him look like the bark of the forest trees among which he prowls; and makes his form blend with the gray rocks, and melt in the gray air, when he hunts in the open. His color protects him against his enemies and hides him from the deer and rabbit.

So, too, the yellowish color of the smaller wolf, the coyote, and the reddish color of the red fox blend with the color of the bushes and grass where they hunt, and help to hide them from sight. Can you tell of what advantage it is to the wolf of the Eskimo that he is whitish, and to the beautiful Arctic fox that he is pure white, in the land of almost perpetual snow?

Quite as useful to men and women are these colors when the skins and furs of the wild dogs are made into garments. When the Indian hunter wears a wolfskin coat, he is not so easily seen by the deer or wolf he is hunting. It would not do for him to wear the Eskimo wolf's skin any more than it would do for the Eskimo hunter to wear the gray wolf's skin. Can you tell why?

Foxes have long, soft, bushy, and attractive tails, called brushes by sportsmen, which they wrap about their cubs to keep them warm. When attached to

a boa for a lady's neck, the tails are valuable, not only for warmth, but for beauty.

The body furs protect the foxes against the cold. They are so thick, fine, soft, and warm, that they are sought for ladies' wrappings and muffs, and for robes. But the dark color of the fur which helped to hide the foxes from view is desired by ladies for just the opposite reason, — to show and reveal, not to conceal.



What is so necessary to the wolf and fox as the set of tools which they carry in their mouths? The teeth are hands, knives, and daggers for them.

When the wolf falls upon the neck of a deer, it is with his teeth that he wounds the deer to death, and crushes the bones that are a part of the wild dog's food. To do their work well, the teeth must be hard and strong, like the tusks of the elephant.

Tusks and teeth are composed of fine material which is easily polished. The wolf polishes his teeth by using them. So they have always been finished jewels ready to adorn the neck of a squaw,

or to make points for the Red Man's tools, and for the tools of our bookbinders and workers in gold.

In parting with these destructive and cunning flesh eaters, we must turn a kind and grateful eye to the wolves and foxes. They were the forefathers of our home dogs, big and little. If they had never lived to growl and snap, to plunder and steal, we might never have had the delights of Toots and Vic, of Rab and Rover.

WHY JACK WAS A DULL BOY

I

We are apt to think that only those animals which work for us, or give us things to eat or to wear, are useful. But many other animals help us, though in another way, and whatever helps us in any way is useful.

Suppose some one asks you why children play; why people go to the theater, hang pictures on the walls, or place plants and flowers in the window. Can you give a good reason why? Or do you think it better to work all the time, and not to play, or look at, or listen to anything that pleases?

You may have heard it said that "all work and no play makes Jack a dull boy." There is a long story in this old maxim. I think Jack was a real boy who lived a long time ago in a country village.

He had to work almost all the time, when he was not either eating or sleeping.

He had to get up early in the morning and kindle the fire. Before breakfast he had to drive the cow from the pasture, feed the pigs, and pull weeds in the garden. He had no time to play, and he was allowed no pets to play with. After breakfast his mother washed his face until it shone, and then hurried him off to school. There he had to work again, not so much with his hands and feet as with his brains.

It was a school of the olden time. The seats were rough and hard, with straight-up backs. The old schoolmaster was cross, and carried a stick to keep Jack and the other boys hard at work. There was no recess. Poor Jack was made to feel that there was nothing in life but work, work, work. No wonder that Jack was

> "— the whining schoolboy, with his satchel
> And shining morning face, creeping like snail
> Unwillingly to school.'

Everybody knows that if a boy, or any other person, has only one kind of things to think of, and only one kind of things to do, he cannot be very bright; and if he isn't bright, he will grow dull. It is not strange, therefore, that Jack was called a dull boy.

It was right, of course, that Jack should learn to work while he was young. All play and no work would have made him a silly boy, I fear. There is real pleasure in knowing how to do useful things. But Jack would have worked better if he had been happier; and he would have been happier if there had been more variety and spice in his life, — if he had been allowed time to play, or some one or something to play with.

Even a mother cat knows that her young ones must play well if they are to work well. So she teaches them to play, and then teaches them to work at catching mice. She herself is too smart to let them either play or work all the time. She seems to know that all work and no play makes dull kittens.

II

Jack's hands and feet, also, needed play to make them work well, and his mind needed play to do its work well. But Jack's heart needed something to rest and cheer it; for the heart is the power that moves both mind and hands. If a pet dog had capered along with Jack when he went for the cow, or had sat by him with ears up and face bright while he was milking, work would have gone much better with the boy.

Then, when he came from school, it would have given new heart to Jack to see his dog, wagging his speaking tail, running to meet his little master; and to see the old cat while softly purring, raise her back and rub her fur against his leg. It would have given him new courage for his work to hear a canary chirping or singing a cheerful song.

Pet animals are as useful in their way as working or food-making animals. By trusting us, and by giving us their love, they open little streams of love in our hearts that spread over our spirits and refresh us in our work.

They teach us habits of kindness, of thoughtfulness, and of duty, too. Because if we love them, as we must if they love us, we will remember to care for their needs — to give them food and water regularly and to give them comfortable beds. They make us think less of ourselves and more of others. They do the best kind of work for us, and we are only too willing to make a fair return.

Pets are helpful not alone to children. Grown-up people some of them great and good people, have found rest and relief from toilsome labor by turning aside to enjoy their animal friends.

Sir Walter Scott, who wrote a large number of novels, was an uncommon worker. He kept about him a jolly crowd of dogs, for play and pleasure.

His favorite was Maida, a deerhound, six feet long. He had a number of little dogs, too, called Pepper, Ginger, Mustard, Catchup, Soy, and Spice.

Landseer, the famous artist, had many animal pets who were very fond of him. His dogs would sometimes look over his shoulder at his work, while he was drawing, as if they were judges of art.



Sir Edwin Landseer

You will some day be interested in Charles Dickens, the author of "David Copperfield," "Old Curiosity Shop," and many other novels. He, too, was a great worker. You may wonder how he did so much in so short a time. To refresh his heart and to cheer himself in his work he kept a large family of pet animals. Of dogs, there were Timber, Linda, Bumble, Mrs. Bounce, and Sultan.

Of birds, there were Dick, the canary, an eagle, and several large black ravens, of which a famous one was Grip. There was also a group of kittens.

Sir Isaac Newton was a mighty thinker as well as a mighty worker. His heart was bound up in a little dog who was always with him. He had discovered wonderful things about the earth and the stars, and had labored hard to write a book to tell what he had found. One day, when the written pages were lying on his table, the dog upset a lighted candle and the valuable papers were burned.

Sir Isaac was greatly distressed. So much hard work, and now all gone! But the little dog, who perhaps ought to have been punished for getting on the table, had been so much to the great man that he only cried out, "O Diamond, Diamond, thou little knowest what thou hast done!"

OUR DOG

I

Our home dog, as you know, is descended from the wild wolf or fox. This is quite natural. Most of our cultivated plants have come from wild plants. The large, bright-colored, juicy apple of pleasant flavor has come from a hard, green, sour thing, like the wild crab apple. Huge strawberries,

raised in cultivated gardens, are but improved children of very small wild strawberries.

Our fine horses, cattle, sheep, and dogs are improved children of wild horses, wild cattle, wild sheep, and wild dogs. If you were to examine for your-



self, you would see that the dog of our red Indian is like the coyote; the dog of the Eskimo like the northern wolf; the sheep dogs of Europe like the wolves of that country; and the Asiatic dogs like

the jackal. In many countries are sharp-nosed dogs that resemble foxes.

Some old habits still cling to our dogs, which constantly remind us of their wild ancestors. If you were to watch a wolf or a fox making a bed for himself in the forest leaves, you would see him pawing them into a heap, tumbling them up and rolling them together, and then whirling himself around like a top to make a leafy saucer to lie down in.

Our Toots, foxlike in form, though intelligent and refined in most ways, has never got over this wild habit. Lay down a blanket for him to lie on, double it and smooth it as nicely as you will — he comes to it like a wolf or a fox. He paws it into absurd wrinkles; then whirls round a half dozen times, and, after he has worked it into the most uncomfortable condition, lies down on the rough pile and seems to blush because he is laughed at. You cannot doubt that his forefathers were foxes.

How came the wild dogs to be tamed and educated? This question was before the Bonny Club during several meetings. With all the help the children could get, many difficulties were overcome and many new ideas brought to light. A few of these ideas will be set down here.

Some of the children said that pet dogs are of

no use because they do not work. Others thought that the pets do good work if they please us and make us happy. But older and wiser heads told the children that there would never have been any working dogs if there had not first been pet dogs.

II

The first pet the savage man won from among wild animals was his dog. The wolf became a new being after he was tamed. He had no need to fight for his life, or to catch game for food, or to starve when he found no game. The man protected him and fed him. Care and kindness softened his disposition, and made him trusty and faithful. In return he began to guard his master's home, as wolves and foxes guard their dens.

Great indeed is the change from wolf or fox to pet dog. A wild dog is selfish, as he must be, while a tame one takes delight in pleasing and doing something for others. You know that if a wild wolf were to find a litter of kittens, he would eat them up in a trice; and a fox would nab one or two to carry away to her cubs. A wolf would kill the sheep; the sheep dog guards them and drives them to the fold.

But a true tale of a little house dog tells of an action both unselfish and cunning. This pet dog

was fond of the cat and her kittens. One day, when the cat was away hunting, a strange dog entered the yard. The little dog, fearing for the kittens, carried them quickly away and hid them safely.

Making a friend of the wild animal helped the man who tamed him as much as it helped the dog. It made him a better man. His rude and savage disposition was softened when he came to be trusted and obeyed, when he came to feed and caress a creature that had been so wild and fierce. The baby in the family was the first teacher of love and sympathy for others; and the dog in the family did what the baby had always been doing.

You should read the story of "Rab and His Friends," written by that great lover of dogs, Dr. John Brown. This friend of dogs says: "I think every family should have a dog; it is like having a perpetual baby; it is the plaything and crony of the whole house. It keeps them all young."

In a large city every family cannot keep a dog. The pets would suffer if there were too many. Dogs need more liberty than the city allows. Hence many are lost and become little tramps, and many are ill-treated. In the City of New York there is a society which looks after dogs, and punishes those people who are cruel to them. It also restores to their homes thousands of pets that

have been lost. People who have no dogs are thus educated to be kind to the dogs of others and to their owners.

Thousands of stray dogs, however, never find their owners. These must be killed, or they may become mad and do great harm. Their lives are taken with as little pain as possible. Their skins are turned into leather, from which excellent gloves are made, and all that is left of the unfortunate creatures goes to the soap factory.

III

It is because the tame dog was at first more or less of a pet that many kinds of dogs have been taught to do many kinds of work. The working ones have all turned to good account the natures of their wild ancestors. Look at the dog of the Eskimo. When his master hunts the white bear, this animal uses the cunning of the northern wolf to help him; and, when his master's hook catches a struggling fish, the dog plunges into the water and brings the fish to land.

The wolf has strong legs and powerful shoulders, or it could not endure to run down the caribou deer. The Eskimo, having neither horse nor ox to draw his loads, has trained his wolflike dogs to put their powerful bodies to profitable use. After the

dogs are harnessed to a sled — sometimes twelve in a team — they gallop away over snow and ice at the rate of sixty miles a day.

In former times, before steam and electricity were used for power, dogs were trained to make machines go. It was once the custom in Europe to roast meat before a blazing fire. The meat was hung on an iron spit or axle. The spit was turned by a wheel, which was itself turned by a small, short-legged dog treading on the rim of the wheel. For this reason he was called the turnspit. In the same way larger dogs were trained to churn cream into butter.

Our dog has, by the skill of man, been bred into many varieties, each turning to good use some special disposition of the wolf or fox. Now let these different kinds help you in an interesting exercise. Take your paper pad and pencil and write briefly what you have learned.

Name and describe the different kinds of small pet dogs, and tell of their smart and cunning doings. Which of them have a passion for catching rats? Name the large ones that guard persons and property; those who love to save life — that rescue from drowning, and from perishing in the mountain snows; those of swiftest foot, and those European dogs that hunt deer; those whose scent

is for ground birds; those that swim and bring ashore ducks which have fallen by the sportsman's shot; and do not forget those with striking, humanlike faces, who are very gentle with their friends, but a terror when put on the scent of runaway men.



DOG WORKERS AND HEROES

I

More interest than ever is taken in Eskimo dogs now that they have become so necessary to the miners who rush to the arctic regions of Alaska, where gold abounds. It is there that these wolf-like dogs are seen by American eyes.

These animals have their faults as well as their virtues. The Eskimo seldom allows his dog to enter his hut, or to be petted as we pet our dogs. If one is permitted to spend a part of his time indoors,

caressed by the children, his outside companions grow jealous of him, and worry him to death. This is because the animals have continued so near to the nature of the wolf.

You will notice that the Eskimo dog has upright ears like those of the wolf. Standing ears are necessary to wild animals to enable them to catch the sounds that float in the air. The case is different with nearly all dogs that have for many



generations been fondled by human hands. Their ears droop, for these animals are protected from danger, and have less need to listen for the sounds of danger. The Eskimo does not fondle his dogs.

One often wonders why our working animals are so willing to labor day after day. A disposition to work is born in all animals, though some seem to be idle. In the wild state they must be busy to get their food; but after they are tamed, and their food is provided for them, they enjoy reasonable work for their masters. The Eskimo dogs have a rough

life as we see it. They sleep in the snow during the bitterly cold nights. They sometimes draw loaded sleds two thousand miles within two months.

While making a long journey they seldom get more than one meal a day, a dinner of dried fish or fat meat, and when not at work they are usually not fed at all. Yet they like to work, and they are shrewd in doing it. The leader in a team, by his intelligence, often finds the right road when his driver is wholly unable to do so.

II

"Talk about dogs," said an old Alaska miner, "why, the curs of high and low degree in the East are not to be compared with the Eskimo dog. Put him in the harness, and a broad smile spreads over his face, his tail curls grandly over his back, and with head and ears erect every step he takes is a poem in the arctic snows.

"From puppyhood up he takes to work like a duck to water. He goes at it with the vim and vigor of his wild ancestors. Rig the pup in any old harness, and it's amusing to see how good-naturedly he buckles down to work, never tiring, never feeling discouraged. One becomes very much attached to these useful and obliging animals, and they always improve on acquaintance.

"I am led to these remarks," said the old miner, "because men and boys in this mining country try to train all kinds of dogs to work in harness. They can't succeed, because the poor brutes are not born that way. The Newfoundland and St. Bernard dogs appear to have no interest in their new occupation, and they show this in their downcast tails and faces. The Eskimo dogs have shared my joys and sorrows in this arctic land, and this is why I have a tender heart for them."

Wisest and best of all dogs is the Scotch sheep dog, the collie. He likes to tend and drive sheep and cattle; and so faithful is he that he will endure hunger, cold, and wet for a long time rather than neglect his charge. He does his duty without being told, and he is so much like human beings that he often gets ideas of what is going on from listening to the words of his master.



Recently a man in New Jersey brought home seven fine cows, intending to exhibit them at a cattle show. He shut them up in his barn, but they soon grew homesick, and broke away from their confinement one dark night. In the morning their tracks

had been covered by a fall of snow. While the owner was telling his neighbor about the lost cows his two collies were listening.

Soon the dogs disappeared, the man knew not where. For five days nothing was heard of either the cows or the dogs. On the sixth day, however, the prize animals appeared, half frozen and half starved. Behind them were the trusty collies, running and barking to drive the cattle to the barn. The cows had been found several miles away in the woods, where they were eating the twigs of trees. No one knows how the dogs got anything to eat.

Frequently, of late, the newspapers have told of fox terriers and other little house dogs, who, when fire broke out in the house, ran to their mistresses and, by loud barking, waked them from sleep in time to escape from the flames.



Newfoundland dogs have often been known to rescue people from drowning. The following story illustrates their intelligence and affection. While on a wharf one day one of these dogs saw a kitten struggling in the water below. Without hesitating

a moment, he plunged from the pier, seized the kitten by the nape of its neck, swam far around to a low place where he could make a landing, and brought the panting little waif safely to its friends.

An old negro, called "Uncle Ike," lived in Kentucky until, as his neighbors reckoned, he was a hundred years old. During his later years he lived in his shanty, with only one companion — his large dog Turk. He, like his master, was old, and he had grown gray about the nose.

When at last Uncle Ike died, and was borne to the burial ground, old Turk followed with the mourners, and, after the grave was filled, lay down upon it. No one could coax him away. He would neither eat nor drink. He died of grief, and his bones were left where he lay, to show how faithful he was.

BEARS

I

Think kindly and justly of the black bear. He is not so ravenous as the wolf. When the nurse calls to the children, "Come in quick or the bears will get you!" she speaks falsely of the bears and injures the children. Bears are not hunting for children to eat them up, as some stories tell.

The black bear of our country is about as large

as a Newfoundland dog. The fur of the coat is longer and finer; the legs are larger and looser; and the feet end in five toes, but are not used like the dog's feet. The front teeth are doglike but the back teeth are broader and better fitted for grinding.



You can get an idea of the food an animal eats from the way its tools are made, and, when you know the kind of food it eats, you may judge how it will act.

The black bear is a flesh eater, yet he lives much on plant food, such as nuts and berries, which his teeth enable him to chew and grind.

Plant eaters have a milder disposition than flesh eaters. Lions, tigers, and wild dogs, which live wholly on meat, are not kind to other animals, because they must kill to get food. But those bears which live partly on plant food are not cruel,

and it is only when the mother bear has cubs to protect that she acts fiercely. Such bears are usually good-natured, even droll, as they show themselves after being tamed.

It is of advantage to the bear, and beneficial to men who make use of him, that his body and tools are made just as they are. The bear's body, though heavy, and his legs, though they seem clumsy, are so flexible that he can climb either a small or a large tree. He can thus gather nuts, on which he fattens, and plunder the hives of wild bees in dead tree tops, to add honey to his diet. The flesh of the black bear, produced from such fare, is excellent for human food. The bear comes down from the tree backward, and because of this habit he is easily caught by the Red Man.

II

A pair of black bears, when winter comes, find a hollow tree in which they sleep until spring, and where their cubs are born. It is during this cold season that they most need their thick, heavy coats, which serve so well for the Indian's bed cover, or the white man's robe. This winter sleep without eating is possible because the bears have already grown very fat. The life of the bears and of their cubs is nourished by this store of fat. From it, so

needful to the bear, the Red Man gets oil to dress his leather and his hair. The white man too has found this fat useful for various purposes.

You can readily see how beneficial to men is this long winter sleep of the bears. The same severe weather that locks up the food of the animals



makes the Red Man's hunt for the deer more uncomfortable and difficult. For him, then, it is good fortune to find a pair of fat bears fast asleep in their winter den.

The white polar bear of the North lives almost entirely on fish. His long neck is a help in catching fish, and the stiff hairs on the soles of his feet prevent slipping on the ice. During the extremely

cold winter, the mother bear digs a den in the deep snow, where she sleeps for months and nurses her cubs.

The dark color of the black bear serves to protect this animal from notice by his enemies when roaming in the forest, and the white coat of the polar bear makes him, also, less noticeable in the regions of snow and ice.



The black fur makes a showy cape for the coachman in the city, while the white fur of the polar bear protects the Eskimo hunter from being seen, and also makes a handsome robe or rug for the white man.

The way in which the bear uses his feet is shown in nothing better than in the tricks and dancing of the showman's animal, the European brown bear. In the old stories he is called Bruin. You will see that he uses his feet in the dance as he used them when he was wild.

When any bear walks he strikes the ground with

his whole foot. The dog steps only on his toes. When he sits up, as some dogs do, he rests on his whole feet, but cannot walk on them. The wild bear always walks in this way — flat-footed — and thus he is able not only to sit up but to walk on his hind feet, while he may hug a stolen pig or carry some other bundle in his arms.

So the trained Bruin, being flat-footed, can dance to music; or, joining hands with his keeper, he can run through the measures of a waltz nearly as well as a flat-footed boy or girl.

The grizzly bear of the western mountains is four times as large as the black bear. He lives mostly on animal food, and is as ferocious as a tiger. He cannot be tamed, his flesh is not pleasant for food, and the only important value he yields is his very large robe.

A BEAR FARM

I

Fifty years ago there was great excitement over the finding of gold in California, and thousands of people rushed to that far-off country to make their fortunes.

The trip across the scorching plains, and over high and rugged mountains, was a difficult one, beset by hardships and dangers. There was no rail-

road to the Pacific Coast at that time, and many people made the journey of more than two thousand miles by ox teams, fighting hunger, cold and heat, and hostile Indians.

Among those who braved the terrors of the overland trip were a young man and his wife from Missouri, who settled near the Sacramento River and opened a tavern. They had very little money but plenty of pluck. For a time they prospered, and often took in from their guests a hundred dollars in gold dust (the only money used) before breakfast.

But fortune after some years turned against them. The digging of gold was less prosperous, and the hotel business suffered. Finally the father died, leaving the mother with a family of nine children. She sold the tavern, and removed with the family to a country far north, where she bought a farm and set up a new home.

Then occurred an outbreak of the Indians, who burned her house and barn and drove off her cattle. But the brave woman never gave up the struggle. She kept her pursuers at bay with a rifle until she reached a refuge for her family, five miles away. After that she, with a son and daughter, moved to a wild mountain ridge in the Coast Range.

The prospect before them was anything but rose-

colored. All around, as far as the eye could see, were mountains, forests, and grassy hills. What chance was there to make a living here? The answer to this question will show what people of quick wit and courage can do when they are energetic and are determined to make the most of their circumstances.

They built a cabin, and started to raise sheep and pigs on the grassy ranges. But the mountain woods about them were the home of bears. There were so many bears that they ate up not only the sheep and pigs as fast as they were raised, but even the chickens.

II

This seemed to be the worst plight of all that had befallen the ill-fated family. How could they make a living now? The mother, a tall old woman with white hair, was equal to the crisis. She had proved her own skill with the rifle. Her son was a good shot and knew nothing of fear. Her daughter also had learned how to handle a rifle, and was equally courageous.

So the mother determined that if she could not raise sheep, pigs, and chickens, she would make trouble for the bears, and compel them to pay for the damage they had done. Then the three set about killing bears, and sending their meat and

skins to market. Mary, the daughter, soon became a "crack shot," and the skins of the animals she killed went to market bearing her name.

In the early spring it was not hard to find the winter dens of the bears, and whenever a mother bear was shot, the cubs were brought home to the farm. This started a new idea — a bear farm. Why not? One of the cubs grew to be a large creature, and became a docile pet, whom they named Pansy.



About the only sport the family had to relieve the dullness of their wild life was when the old woman with snowy hair filled her apron with apples and threw them, one by one, for Pansy to catch in her mouth.

The idea of a bear farm grew. More cubs were captured, and the number of bears killed increased to fifty, even a hundred, each year. The farm came to be a paying business. The skins sold brought from ten to thirty dollars each. The oil from a single bear brought from thirty to forty dollars.

Bear steak was also in demand after the animals had grown fat on the falling acorns. When the bear meat was cut into pieces and dried in the sun, it was called jerked meat. This, too, was enjoyed as food, and found a ready market. Added to all this, an occasional sale of a live cub brought twenty-five or even a hundred dollars.

Surely, very few families ever make more out of discouraging circumstances than did this one.

SOMETHING ABOUT FUR

I

There is quite a difference between hair and fur — see if there is not. Hair is straight; fur is wavy or curly. Hairs will not stick together; they fall apart. Pinch a few threads or fibers of fur and they will cleave to one another. Why is this so?



Put a fiber of fur under a magnifying glass. You will see what your eyes could never discover without the glass. The fiber is covered with the smallest possible hooks, or barbs. It is by these barbs that the fibers hold together. Examine a single fiber of hair and you will find that it has no barbs.

Even in the finest furs there are some long hairs. These together are called the overhair. They keep the fibers of the fur from packing too close, and thus make the covering of the animal warmer and more pleasing to the eye.

On a very cold day, put a lady's muff to your half-frozen ear. How delightfully warm it feels! Watch the boas and muffs, capes and jackets of fur, as they pass along the street. They are attractive; some of them are beautiful.

Can you think of a better covering than fur for an animal in the terrible cold of the far North? Coats of fur must then be quite as warm for the people in that country. They could not endure the intense cold without these coats. Bears, wolves, and foxes yield clothes almost ready made.

You know what the beds and clothes of the Eskimo are made of. Hunters in the far North, gold diggers in Alaska, and people who explore to find the North Pole, are all compelled to imitate the Eskimo in using furs. Even in our most northern states, furs are necessary to protect against the winter cold.

Men need overcoats, mufflers, and gloves of fur. Women need boas, muffs, capes with upturned collars, and jackets of fur. All must have fur robes to wrap themselves with when they ride in sleighs.

II

But furs are worn where the weather is not so cold. Why? Because they are showy and beautiful. For this reason they are often worn when it would be more comfortable to go without them. For thousands of years, people have set the greatest value on at least five things, which they call precious. These are gold, diamonds, pearls, some rare and beautiful stones, and furs.

The people of ancient times had fur skins to cover their floors and couches. The sacred tabernacle of the Israelites was adorned with such skins dyed red. Great heroes were clothed in furs; and the choicest were reserved for kings and nobles. Furs were as fashionable then as they are now. There was such a rage for them that some kings gave orders that the people must stop paying so much money for them.

Here is a problem to think of: The choicest, and in every way the most valuable, of all furs are taken from small animals that reach their dens or catch their prey by gliding into holes in trees or in the ground. Of what use is the short, fine fur to such animals?

The buffalo is a great, bouncing creature, living on the surface of the ground, and the fur on his skin is very coarse. The wolf's fur is finer; the

bear's still finer; and the fox, which burrows in the ground, has finer fur than any of these. The pretty-faced raccoon is a tree animal, as is the gray squirrel, and these have coarser fur. The rat and the ferret, which slip through small holes, have very fine, soft fur. The rabbit, which burrows in the ground, has a softer fur than the hare, which lives above ground.



A DETECTIVE IN FUR—THE FERRET

I

Visiting a shop, where pet animals are for sale, one may sometimes see a ferret. It is a yellowish, whitish animal, as long as a cat, and as small around as a rat. Its legs are short, and its claws sharp. The head is small, the ears look as if they had been cropped with shears, the nose is tapering, and the teeth are sharp and piercing. Its body is almost as limber as a snake's; and taken all together the ferret looks like a snake on legs.

The ferret is one of a large group of fur-bearing animals. By knowing this one, therefore, you will know many traits and habits belonging to its furry

cousins, such as the sables or martens, which produce the most costly furs. These long, flexible animals are so formed that they can make their way without difficulty into and along holes that are small and crooked. They would be ill-formed for their work if they had long legs and ears, or larger, stiffer bodies.

Ferrets have fine, soft fur, but not for this are they noted or valued. They are not killed for their skins, because they are needed for useful work which calls for life and action. Like all their relations in fine fur they are lovers of blood, which is their main food. They seize a rat, rabbit, or ground squirrel by the neck, kill it, and suck its blood. Thus they kill many more animals than they could possibly eat if they lived wholly on flesh.

The ferret is not now a wild animal, though it is not very tame. It is bred under human care, and has been for two thousand years. Its forefathers were wild, and lived in Africa. The story which tells how ferrets first came to be tamed is well worth reading.

More than two thousand years ago Spain was badly infested with rabbits, as in late years the same pests have overrun New Zealand and Australia. The crops of Spain were eaten up, and the people were in danger of starvation. Besides eating every

green thing, the rabbits bored the land full of holes, and left it like a honeycomb.

The study of animals and the study of geography help each other. Turning to the geography, to which you may already have been introduced, you will see how easy it was for Spain to carry over from Africa these little creatures whose disposition to kill ground animals was well known. After they had been landed they were tamed as well as they could be, but they were still ferocious and hungry. Then they were let loose to rid the country of its pests. This they succeeded in doing, and thus, as the Greek story goes, ferrets saved the people of Spain from starving.

II

Though the ferret was tamed, and has continued tame during all these hundreds of years, it is a poor kind of a pet, and there is good reason for this. Our dogs are more amiable as pets, because we do not allow them to kill other animals for their own food, and our cats, if well fed and much fondled, are not apt to be good mousers.

But the ferret is tamed in order that it may kill rabbits and rats; and the temptation to do so is that the ferret is allowed to suck the blood of its victims. Its ferocious nature is thus kept alive. It is no wonder that now and then the little imp nips

the hand of its owner, who handles the soft, silky thing and puts it in his pocket. It is often necessary, therefore, to fasten a wire muzzle over its nose.

It was very natural that ferrets, having once rid Spain of pests, should be sought for by other countries. After a while they spread throughout Europe, and were finally brought to this country, to keep up the war against rabbits and rats. Perhaps you can now see why this animal gets an advantage from its soft, slippery fur when it squeezes through very tight places. But the one thing that makes the ferret so useful and effective is that it kills its prey for the blood and not for the flesh. Hence it is much used as a destroyer of pests.



The ferret man, with his gang of underground detectives, — bloody little knaves, — becomes a man of business and a contractor. He takes jobs of ridding warehouses, hotels, and dwelling houses of unruly rats. His armed detectives do their work thoroughly. In some cases, where rabbits are to

be routed from their holes so that they may be taken for game, the ferrets are set to work with muzzled noses.

The ferret, by his delving, persevering work, has given a strong word to our language — a word of action and pluck. We ferret out a secret or a hidden crime. We make ferrets of our brains, and set them at work to run down difficult answers to hard questions; to find the things that trouble and perplex our study that we may chase them into the light.

A TALK WITH A FURRIER

It was scarcely nine o'clock in the morning when Mary Burns stepped briskly into a shop where fur garments were made and sold.

"I have not come to buy anything," she said to the polite lady in attendance, "but to get some items for my notebook — for our little club, if you please."

"About furs, I suppose," said the lady, "and I shall be only too glad to tell you what I can, for I myself have a strong liking for animals as well as a fancy for furs. Have you learned anything about the fur-bearing animals?"

"Oh, yes," said Mary. "I have learned about wolves, foxes, bears, rabbits, and squirrels."

"I presume so, but they are not the animals that yield the most expensive furs. Come with me to the show window. It is filled with very quiet people, you see, because they are only stuffed skins. We don't have to feed them, and they won't hurt you."

They went to the window.

"Here are your old friends," said the lady, pointing them out one by one. "And here is the beaver."

"Yes, I know the beaver," said Mary. "He is the fellow that cuts down trees with his teeth, and builds a dam of timber, mud, and sticks across a stream, to make a pond, in the middle of which he builds his house."



"That is correct, and you notice that his fur is thick and soft, as the furs of most water animals are. You see that larger animal, which also lives mostly in the water. It is the seal, or sea bear, of Alaskan waters. The small one in the corner is the muskrat, a river and pond animal. The fur of all these is not injured by being wet.

"And the otter," the lady pointed out, "is a bear-like water animal that grows an excellent fur, once

very fashionable for overcoat collars and for gloves. Otters are jolly fellows, often sliding down mud banks in play. But they are growing scarce, because so many of them have been killed just for sport."



"Which animal has the most costly fur?" asked Mary.

"The Russian sable. It looks like this weasel here, and has the same form and habits, but a much more beautiful fur. Here is a bit of the pelt, and I will show you a sable garment soon. But here are two pieces of pelt. I wonder if you can tell what two different animals they are taken from."

"Why, the weasel looks like the ferret, only it is red," said Mary.

"Yes, the ferret belongs to the same family," said the lady.

"And these two pieces of skin," continued Mary, "I am sure are sealskin. I have seen so many sealskin capes and muffs. They look alike and feel alike."

"But one of them is beaverskin," the lady explained. "This shows you how much art there

is in making articles of fur. The beaver's skin, or pelt, is dyed exactly like real sealskin and is clipped by a machine, so that you cannot tell one from the other. I can also show you furs which look like sealskin, but which are made of the pelts of Belgian hares and raccoons. You know the raccoon?"

"Yes, indeed, he is the little tree bear, and is much prettier than this stuffed thing."

"So he is, but yet is a mischievous rascal in the farmer's cornfield. In former times the boys on the farm had coonskin caps, and nearly always there was nailed on the log cabin a coonskin drying in the sun. You see, then, how skill and art are making beautiful things of such ordinary affairs as hareskin and coonskin."

Mary was then taken to see a Russian sable jacket hanging on a rack. She admired its beauty, but did not understand how so large a garment could be made of so small a skin.

"We call it a pelt rather than a skin," said the lady, "because a pelt is a skin with its fur. Many sable pelts were put together to make this jacket, and the making of it is almost as much a work of art as the painting of a picture by an artist.

"You see how the shades of color are made to run in regular lines. This is done by piecing together parts of many pelts. These are not cut with scis-

sors, which would injure the fur, but with a peculiar kind of knife. A single pelt usually costs two hundred dollars, and a jacket of this fur often sells for two thousand dollars, or even more.

"For the trimmings of elegant fur garments the pelts of foxes and chinchillas are very fashionable. You should know the pretty, squirrel-like chinchilla of South America. The linings of jackets, capes, and muffs are made from the pelts of rabbits, squirrels, and muskrats. So you see how many kinds of animals, from all parts of the world, are yielding their pelts to make us warm and attractive."

"I should think all the fur animals would be killed off after a while," said Mary, thoughtfully.

"No, not for a long time. Some will go like the otter, and the raccoon, which is destructive. But fashion changes, and a very popular animal goes out of style for a while. Then its kind has a chance to multiply. The art of the furrier will find a way to get out of any difficulty. Tame animals, like Belgian hares, are quite the rage just now for both flesh and fur. Then, too, there are hare farms and farms for raising cats, especially black cats, for their pelts."

As Mary closed her notebook and was taking leave, her instructor added: —

"Now, my dear girl, there is one thing I hope

you will carry away with you and think of. Not only are millions of animals sacrificed for our pleasure every year, but think of the men who capture them—those who trap and shoot the beautiful foxes in the dreadfully cold North, and those who suffer hunger, are frozen and sometimes die, while they hunt for the richest furs in the ice-bound winter of northern Russia and Siberia."

SQUIRRELS AND CHILDREN

Central Park is a school, or rather contains many schools, for children and for grown-up people, too. There are occasions when they are allowed to go on the grass, but it is well for both young people and older people that the warning "Keep off the grass" is before their eyes.

There would be no grass if the people at all times were allowed to tread upon the green lawns. Therefore the law which forbids them to do so is just, because it is for the good of all. To walk in the park, and to enjoy its beauties, without injuring the grass or shrubs or flowers, is to learn a lesson of obedience to the law.

But the park does much more than teach such a lesson. It teaches us to love what is beautiful to the eyes and the ears. For what else are the shady

trees, the leafy shrubs, the lovely flowers, the singing birds, and the graceful walks and quiet lakes? The squirrels, also, are a perpetual delight. It is well that they are preserved here, for the wild squirrels are fast passing away, killed as they are for food and fur.



In the park, squirrels are shown to be of a higher use than for potpies and for fur. They teach lessons of human kindness, and give examples of innocent, childish play; for they are very human in some of their ways. This is what Uncle Mack thinks, and he has been a constant visitor to the park for many years.

Uncle Mack loves both children and squirrels. For the one he keeps in his pockets crackers, for the other nuts. He carries in his hand a hickory stick, to punish unruly dogs with, but he never uses it on children, though he thinks some of them are almost as unruly as the dogs.

Because some children try to abuse the squirrels, Uncle Mack thinks they are afraid of all children. "No wonder the squirrels fear children," he says,

"for I have seen women hand switches to their little ones, saying, 'Here, take a whip, baby, and whip the squirrels.'"

All children who know Uncle Mack love him. Some of them call him Grandpa. The squirrels know and love him too, for they trust him as a friend; and has he not become lame with rheumatism by caring for the pets in stormy weather? When he enters the park and blows his whistle the squirrels rush to him from every direction, as if shaken from the trees.

He calls them by name — Switchtail, Daisy, Barney, Garibaldi, and so forth. They come without a fear. They climb up his clothes and his hickory cane; sit on his shoulders; and pull at his hat, until he gives them nuts. They even go down into his pockets to find nuts. Do you not think Uncle Mack is a good teacher and has a model school?

Then, again, the squirrels themselves keep school, in which they teach how to play in a most human way. "A visitor to Central Park, the other day," says the *Herald*, "was sure the squirrels know something about boys' sports, or he thought perhaps the boys had got some of their games from the squirrels.

"While sitting on a bench in one of the walks,

the visitor noticed two squirrels which were playing tag with all the spirit any children could show. They chased each other back and forth over the grass and up and down the trees, and took turns as regularly as two boys would have done.

"Then, to the visitor's surprise, they suddenly stopped playing tag, and began a real game of leapfrog on the fence rail. First one would jump over the other, and then stand still while the other jumped over him. They kept this up for several minutes, each taking his regular turn. The visitor wondered if the squirrels were imitating youngsters they had seen at play, or just knew the game all by themselves.

"When the squirrels had tired of leapfrog, they dropped to the ground, wrapped their arms around each other, making themselves into a ball, and rolled down a short hill to the bottom. Then they scampered back to the top and rolled down again, keeping it up a half dozen times.

"Finally, the squirrels' playtime seemed to be ended, for as they separated at the foot of the hill, after one of their rolls, they suddenly ran off, as if called to dinner, and quickly disappeared. The visitor regarded his glimpse of the squirrels' play as a most delightful experience."

HUNTING THE CHINCHILLA

The chinchilla is in some respects like our common squirrel, and in others like the rabbit. It looks more like the squirrel, but acts more like the rabbit, for it burrows in the ground to find a secure place for its nest. The chinchilla cannot climb a tree; it lives where there are no trees.

Where does this squirrel-rabbit live? Away up on the lofty Andes Mountains, in South America, so far away and so high up that it seems as if no enemy would ever find it. Chinchillas gather together in large, happy villages, and build cities in small hills on the shoulders of the high mountains.



But alas for these quiet mountaineers! They are clothed in thick, soft coats of dusky gray, streaked with darker color, which are very beautiful. People began to find out how attractive and how warm this dress of fur is, and wanted it; and what people want, in these enterprising days, they

will have, no matter in what corner of the earth it may be.

Because they are like squirrels, the chinchillas have a handsomer fur than if they were altogether like rabbits. Then, too, the clear, dry mountain air improves their pelts. But they could not live where they do if they were not also rabbitlike, for there are neither trees nor nuts — only roots. So they must burrow for their nests, and dig roots for their food. They are so gentle in disposition that it is a pity to disturb their peaceful homes.

At the foot of the Andes live tribes of half-wild Indians, who are only too glad to get the white man's money in exchange for chinchilla furs. But it is no easy task to catch the cautious, cunning dwellers in the ground in such a way as not to injure their precious fur.

The Indians at first tried to pierce the animals in their holes, using for this purpose the sharp spines of the cactus plant made into spears. By this method the skins were torn. Then they set traps to snare the victims when they came out of their holes to feed on roots in the moonlight. But the chinchillas, like many other cunning animals, soon found out what the traps were for.

The Indians then tried to smoke them out by building fires at the mouths of their holes. This

way was effectual, but the smoke turned the pelts yellow. After that the little ferrets, with which we catch rats, were procured at a large price. This scheme proved to be too expensive and too slow. Then the shrewd, crafty white man came to the help of the Indians.

The powerful, terrible dynamite, which is used to blast rocks and to blow up ships, was brought to the hunters, and they were taught how to use it. In what way could it be applied to the capture of chinchillas without blowing them to pieces?

The dynamite was used to make a great noise, and to cause the ground to tremble, and not directly to injure the bodies of the ground dwellers. The chinchilla was rather to be scared than hurt, to begin with. The citizens in the hill must be routed out of their holes with their pelts in good order.

So, around the hill, the Indians build a fence of grass, bushes, and spiny cactus — a fence over which and through which the animals cannot pass. Near the center of this inclosure, when all things are ready, a roll of dynamite is exploded.

The explosion thrills the city to its center, and the little inhabitants rush out of their holes, throbbing with fear. Then the Indians, who are far enough away to be safe from the bursting dynamite,

leap the fence, and dispatch the larger animals by the use of clubs.

The skins are taken off and spread upon bushes. The flesh, which is white and tender, is roasted at the fire and is eaten by the hunters, who share their meal with the ferrets, when they are in the hunt.

Several times during the year, the Indians are met at the base of the mountains by the agents of European and American fur dealers. A large sum of money is paid for the dried skins, which are carried to the seacoast and shipped to different countries. A long time and much labor must yet be spent before the chinchilla of the Andes becomes part of a lady's dress in Europe.

RATS AND MICE

"Rats!" exclaimed Johnny, when he and Mary began to study this subject; "I don't see what good they do. They are rascals, and so are mice. What do we keep Sleepy Eyes for but to kill rats and mice? Rats are as bad as snakes, and everybody knows that snakes ought to be killed."

"There, Johnny," said Mary, "you are always hard-hearted toward animals you don't like. I don't like rats, I am sure; but we have no right

to kill them all. And the mice — cunning little things! it always makes my heart ache when Sleepy Eyes brings one to her kittens."

"You're too soft-hearted, Mary. Either we've got to die or the rats have. Don't you remember how the rats ate up that big cheese in Paris?"

Mary brought her scrapbook, in which she pasted



bits of knowledge that she cut from the newspapers, and this was the story she read: —

"Some years ago, at the Great Exposition in Paris, there was a huge cheese shown by the farmers of Switzerland. It was higher than the walls of a large dining room. It took the milk of hundreds of cows to make this cheese, besides an immense amount of work and skill in the making. Eighteen horses were required to draw the wagon on which it was loaded. The farmers directed that when the Exposition was over the cheese should be given to the poor in Paris.

"Accordingly, when the great show closed, a powerful truck drawn by eighteen horses was standing near, ready to carry the cheese away. As soon as the men tried to move it with ropes and pikes there was a great crash. The huge pile fell like a collapsed balloon. There was nothing left but an outside shell. What had done it? The rats, the rats! They had eaten the inside all away."

"There!" cried Johnny, "did the poor people get the cheese?"

"No, not the poor people," answered Mary, "but the poor rats got it."

Johnny broke into a loud laugh and said: "If the poor rats had their way, there wouldn't be any poor people, or any rich people either, in Paris. But that was a good joke on those men and the eighteen horses."

Mary had to laugh, too, and her mother joined in the fun.

"After all," said the mother, soberly, "though rats and mice do much mischief, it would not do to kill them all. Too many would be bad for us, and not enough might be just as bad. But you, Johnny, made a mistake when you said all snakes should be killed. Some kinds of snakes kill many rats and mice, moles, and other harmful animals.

"Rats and mice, you know, have two pairs of front teeth that cut and dig like a carpenter's chisel. They use these tools, not as the beaver does, to cut down trees for his dam and house, nor as the squirrel, to gnaw away the shell of a nut, but to eat holes in the farmer's grain room where their food is. This is why they are so mischievous.



"But tools that do harm may also do good. Rats and mice get into the pantry, it is true, and gnaw into a box of crackers, but with the same tools they make their way into neglected cellars, drains, and sewers, all of which they do much to keep clean. They eat dead animals and spoiled food that would create sickness. Then they spend much time in cleaning their own bodies; for they are tidy in their habits.

"One scarcely knows whether to admire their pluck, which has moved them to steal passage on ships, and thus to visit nearly every country in the world, or to detest

them for the terror they are to sailors on shipboard. It is a comfort to know that they have saved life where there was no other food to eat, and that their skins make excellent gloves."

MICE AS PETS

It is quite a turning of the tables when the tiny quadruped fought by man and woman for centuries, says *The Sun*, is raised to the rank of a pet. But it is a fact that, for the last ten years, mice have been reckoned among the pets of England, and that some extra fine breeds have found their way across the Atlantic. The American Mouse Club has members all over the country.



Instead of having to risk his life to gain a little corner in the cupboard, Master Mouse has now a dainty little hutch, and is fed on the fat of the land. Among the most interesting of these pets are the Chinese mice, which are much smaller than the common mouse, and of beautiful and delicate colors.

Then there are the Japanese mice, also called the waltzing mice, because they never seem quite so happy as when dancing. Pointing their little sharp

noses to the ground, they whirl round and round on their four feet, as though life were nothing but joy. There are also the singing mice, with their clear, soft whistle. Perhaps the rarest are the Egyptian mice, which have little quills on their backs.

In raising these little pets, a great point is made of their color. There are shiny black fellows with feet and tail to match; and there are mice with soft fur, bright eyes, and playful disposition. These are especial favorites with children. Those with deep blue or black eyes are more highly valued than those with pink eyes.

Those of entire chocolate and fawn colors are highly prized. The most popular ones at present are the cream and pale yellow mice, one of which has been sold for fifteen dollars. Another very pretty specimen has a gray body, with light silver markings, and ears and nose of a delicate pink.

The chief charm in having mice for pets is their intelligence. They may be taught many tricks, even to climbing a pole to bring down a tiny flag. They also show great affection for their owners, following them around, coming when called, and delighting to climb up their clothes to the face or neck, where they will nestle down and purr with contentment. They are very playful, and will amuse themselves with a piece of string as kittens do.

Their homes are made of almost any box, though some very artistic hutches are built for them. For exercise, the cage is provided with a little pole running from floor to roof. A little above the floor is a shelf on which the mice run and leap.

Mice should be fed with oats every day, with now and then a change of bread and milk and fresh vegetables. Cheese should never be given to them. They should also have a basin of fresh water; for after eating they spend a good deal of time at their toilet, washing their faces, smoothing their ears, and cleaning their paws.

OUR CAT AND OTHER CATS

I

One good reason for giving our cat a place among useful animals is, that for thousands of years cats have had a place in human homes. Would people have kept any animal so long in their houses if it had been useless? It is saying a good deal for the cat that she has borne a respectable character during four thousand years.

Our cat, like our dog, has come down from wild forefathers. Her greatest-grandfather was the Egyptian tame cat, though the tabby, or brindled kind, is supposed to have come from the pretty gray, black-striped, wild cat of Europe. The Egyp-

tians almost worshiped their cats. Do you suppose those people would have shaved off their eyebrows, as they did when a cat died, if the animal were a worthless brute?

Sleepy Eyes got her name from the children, who



nearly always saw her in the daytime, when she looked dumpish and stupid, and the pupils of her eyes were almost closed. At night her eyeballs broaden out large and glare like moons. This is why the cat can see in the dark. And this is another reason why cats have so long been counted useful. They hunt at night, when dogs sleep.

If you will take up a kitten and look over its weapons and tools, you will pronounce them more

deadly than those of any other animal. The teeth are like a dog's teeth, only sharper and more piercing. The claws are really terrible — sharp and hooked, so that they can hold what they pierce. All these weapons and tools are the best possible for use in catching and killing, and for defense.

But the way she handles her weapons is one of the best things about the cat. When a dog hunts, he shows all his tools and makes a noise about his work. The cat's way is exactly the opposite. She is sly, stealthy, silent. She keeps her mouth shut, draws her claws into their sheaths, and walks on velvet-cushioned toes.

When the cat crouches, and moves as silent as the darkness, ready in an instant to spring upon her prey, then she is a real lion or tiger. No other animal has more frightful weapons or such a noiseless way of using them as the cat family has. For these reasons the wild cats — the lions, tigers, leopards, and smaller wild cats — have always been the most destructive and the most dreadful of all animals.

Now while you hold the purring kitten on your lap — little bit of a tiger, as she is — you must see how valuable is our tame cat, and why men very long ago tamed the most dangerous beast into a gentle companion. Is it not wonderful that

the wild one — the fiercest of animals — has been so softened in temper, and made so safe in the use of its deadly daggers, that it is now the harmless Sleepy Eyes, fast asleep upon the rug?

It was a great triumph to conquer such a ferocious beast, and to train it to protect the food of man, as it does. But the cat is peculiar and quite different from the dog. She is more attached to the place; the dog more to the persons in the home. The dog is a friend; the cat is a companion.

And this difference might be expected, since the cat has been allowed to keep enough of her wild nature to kill and eat her game, while the dog is trained to catch the game and bring it to his master. The cat is more independent than the dog. She hunts alone, and in that way is very useful.

II

Had the wild cat never been tamed and made a companion in the household, who can tell what might have happened long before this time? You know something of rats and mice, what mischief they make, and how rapidly they multiply when let alone. You may have heard how rats have stolen passage on ships, and thus have spread over nearly all the countries of the world. Read the story of the

Rat Tower on the Rhine, and you can imagine what might have happened, had there been no cats.

Wild rats were kept down by wild cats, but when the rats tamed themselves enough to get into the homes of men and plunder, cats had to be tamed to follow their prey into houses. So every nation at all civilized, living in houses and having stores, has had its domestic cats.



Now you can see how much value there is in our cat's peculiar eyes. Rats and mice do their mischievous work mostly at night. Some dogs are excellent ratters, but they work during the day. Cats, with their dark-lantern eyes, hunt at night. A dog gives up a rat when he has chased it into a hole. A cat, patiently and silently, without moving a muscle, waits before the hole till her game ventures out.



Cats do their best work in storehouses and granaries, where they are not petted much, and where immense quantities of food are stored. But suppose the great storehouses were made of iron, through which these pests could not gnaw holes. Then there would be but one thing for the rats to do. They would rush all the more to the farmer's

barns and bins, and destroy the grain before it went to the storehouses. So, in catching the rats and mice, cats have been, as you see, most useful in protecting the world's food.

Pussy's fur is valuable, and for this alone there are farms for raising black cats. But she becomes a different creature when she is kept only as a pet. Then she is prized for her beauty, her grace of form and action, and for her intelligent



disposition. She forgets her teeth and claws and becomes teachable. The cat schools in England and France show what education may do to change a brutal nature. There the tabby, the tortoise-shell, the blue cat, and the Angora from Asia are taught to live with tame rats and birds, to jump through hoops, and even to ride the bicycle.

Go, now, to the giants of the Old World, and what a contrast! The tiger is the tyrant of the

Asiatic jungle; the lion is the monarch of the African forest and plain. Of them and their smaller cousins little that is good can be said. They are always hungry, fierce, and dangerous. Rosa Bonheur, the noted Frenchwoman, lover and painter of animals, had several pet lions, who would allow her to fondle them as if kittens.

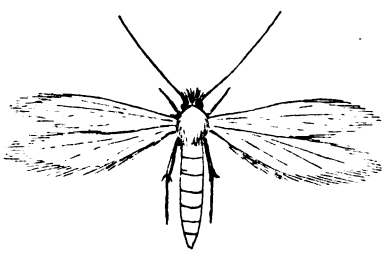
Few lions and no tigers have ever been thus tamed. In their native haunts they are the terror of the people who live near them. When the Boers of South Africa were fighting their way north to found a nation for themselves, they killed not less than three thousand lions. In India, when a tiger gets old and his teeth are worn dull, he takes to killing men, women, and children. Every year these man eaters kill about a thousand people.

The pelts of these giants are dressed into magnificent robes; but at how great a cost!

CLOTHES MOTH AND SILK MOTH

The little clothes moth, less than half an inch long, is considered a nuisance in the house. The silk moth, more than twice as large, is praised for its virtues. Each is known by its work, though the smaller one is seldom seen, and the larger one never visits the house.

The harmful one shall help us to understand the useful one, as the good and bright Cinderella in the story is more clearly seen in the shadow of her vain and mischievous sisters. The clothes moth destroys clothes; the silk moth makes clothes, or rather the material for useful and beautiful garments. But both are busy workers, and, like flies and butterflies, are insects.



The work of insects cannot be understood without knowing something of their strange babyhood. There is but one stage in the babyhood of the sheep. The lamb is born alive and is like its mother as soon as it is born. In the babyhood of the chicken are two stages, the egg, and the chick with feet and wings and other parts like its mother, as soon as it is hatched.

The baby life of the moth and of many other insects has four stages. First, the egg, and from it an ugly, crawling caterpillar. Then, after getting several new skins, the caterpillar changes into a doll, or pupa, inclosing itself in a case of silk. And last, the pupa case breaks open, and out comes a winged moth in every way like the mother that

laid the egg. All this may have happened within about a month.

The mischief or useful work done by the moth is not when it is the egg, nor when it is abroad with wings. The egg has no action, nor does the doll in the pupa case appear to act. It is the middle thing — the crawling, growing caterpillar that is always eating, day and night — that does the bad business or prepares for the good work.



If you could only see this little pirate clothes moth as she goes out in a May night on her errand of plunder! She is after woolen clothes — the finer, the better — and carpets, and fine furs. In these she lays her eggs, and as she lays perhaps some hundreds of them, she visits all the woolen and fur garments she can find, deposits her eggs, and is off.

Why does she choose woolen goods? Because

wool is the food of her babes. How she knows woolen cloth from cotton or linen, no one can explain. In a few days the caterpillars are hatched and begin to eat. They grow fat, and the clothes are riddled with holes, as if shot with a shotgun. After another few days, each caterpillar weaves a silken case around itself, and spins a lining of the finest silk. Then, shortly, the case splits open, and a full-dressed moth flies away to repeat the work of its mother.

One cannot but admire the motherly way in which this winged pirate, with no evil purpose, provides for her coming children. But, as it happens, her evil doing is turned to good account. For there is no creature in the world that creates so great a commotion as do these small clothes eaters.

From fear of their coming, householders the world over beat their carpets and clothes and furs, and clean out closets and drawers. In so doing they get rid, not only of the moth's eggs, but of dust and dirt that contain the germs of disease.

After all, this is good work, and the wicked clothes moth begins to look like an angel of light, cleanness, and health. She has set the world in commotion and caused it to be cleaned up. In about six weeks she is dead and gone.

The story of the silk moth is nearly all told in the history of the clothes moth. The silk moth, or silkworm, as it is usually called, is not a wild insect, and has been so long under human care that it is not known when or where it was first confined.

It is human care, however, that controls the silkworm's work and makes it good. Were this moth left free, its large caterpillars would destroy certain kinds of plants, and would themselves be an easy prey to birds. But so long has it been dependent on the help of men that its wings have lost power, and it must be housed and fed. It is handled, and its eggs are gathered like hens' eggs.



The eggs of the silkworm, like those of other insects, are laid on the food which the caterpillars eat. The leaves of the mulberry tree provide this food, which is spread on tables for the caterpillars to crawl and feed upon. They are enormous eaters, and, when grown, each begins to change into

a pupa. Out of its own body it spins a delicate thread of silk, which it winds around and around itself until it is entirely inclosed and glued. The pupa case is called a cocoon.

It is said that the silkworm turns leaves into silk, but not without help. Just when the cocoon is formed, human fingers take hold, as they did in feeding the caterpillars and keeping them clean. The cocoons, about the shape and size of peanuts, are collected, then heated to destroy the pupas within, and afterward the silk is unwound and reeled upon spools. It is then ready for weaving in the loom.

Wherever the mulberry tree will thrive, these silkworms can be kept. China is the oldest silk-raising country. France and Italy have for a long time sent us their silk thread to weave, and the finest of satins, silks, and velvets are woven from this delicate, glossy fiber.

Forty years ago almost all our silk goods were made abroad. Now nearly all are made at home. Thousands of people, mostly women, are employed in silk raising, and thousands more in silk weaving.

Most valuable of all insects are these humble, tender worms. They spin a floss which gives health, comfort, and beauty to human life. They set in motion thousands of feet and fingers, and help a great multitude to earn their bread.



AN HOUR WITH THE BEES

I

The apple trees were dressed in the blossoms of May when Tony Grant left home to pay another visit to Mary and John Burns. Their mother had suggested that Tony be invited at this time. As it was the beginning of the bee season, the children and the[illegible] in [illegible] Bonny Club were giving att[illegible]'s father was a successful

[illegible]alking of this visit of the [illegible]d to her mother: "Isn't [illegible]knows so little about

the birds and other animals he sees about him all the time? I almost believe country children know less about country things than city children do about city things, and I shall not be surprised if Tony has little to say about bees except that they make honey."

"Yes, it does seem a little queer, as you say," said her mother, "but people on farms work so hard and so long in the fields that they have little time or desire to study what is interesting and beautiful about them. But then, how much do city children know of how electric cars are run, how the telephone works, or how gas is made?"

When Tony came, Mary found that he knew more than she expected. He brought something that was a great surprise to his friends, and to some members of the club who were invited to spend an hour with Tony and the bees.

In one hand he brought three living bees, each in a wire cage, and in the other a bunch of apple blossoms. The children crowded around the table to get a peep at the prisoners behind the bars.

Tony took up one of the cages and explained that the prisoner was the queen, who leads the bee company, lays all the eggs, and is the mother of all. In the next cage he showed the drone, who loafs, is fed, and does no work; and in the third cage

the worker, who gathers and makes the honey and does all the work. This lesson Tony had learned from his father, who prepared the cages for him. Beyond this Tony confessed that he knew little of bees. He liked honey, but having once been stung he kept away from the hives.



II

It fell to Mrs. Burns, therefore, to give such knowledge as she had gathered from bee keepers. She told how the bees live in colonies. Wild bees raise their young and store their honey in hollow trees and rocks, but domesticated bees have wooden hives made for them. The workers go out in search of flowers, from which they suck the sweet juice and make it into honey and wax. With the wax they make combs, in which are nursery cells and honey cells.



The queen lays an egg in each nursery or baby cell, which the workers close up, leaving a small hole to let in the air. In a few days white grubs are hatched from the eggs, as are caterpillars from moth eggs. The workers feed sweet food to the grubs. But the grubs, like the cater-



pillars, soon spin cocoons around themselves, and not long afterward the cocoons open and perfect bees come forth.

The grubs in a few large cells are fed with very rich food, which makes them grow into queens. So bees make their own mother queens. As soon as each new queen appears she takes with her a colony of the common bees, and goes out to set up a new home. This is called the swarming of the bees.

"You cannot spend all your time on the curious ways of these wonderful creatures," said Mrs. Burns, "so I will tell you how they are made useful to us. What are the bees working for? For themselves, of course, but also to feed the queen, the drones, and the young. They fly miles away to find flowers, and, having filled themselves with honey, return home in a straight line. It is believed that they can see a very long distance, but how they strike a direct line for their hives is a mystery.

III

"Bees to be useful must be protected and controlled by men. If left to themselves, a great deal of honey and wax is wasted and lost. Bears, raccoons, and other enemies rob the homes of wild bees. Even domesticated bees, if neglected, swarm and fly away to seek homes in the woods. In Southern

California they get into the roofs of churches and store tons of honey which cannot be reached.

"But when controlled by care and skill, bees are improved in many ways, and what they produce is saved. They know their keepers, who handle them like chickens. Hives are made for them. The queen bees are caught, and each new swarm is put into a separate hive. They feed near home, on orchard blossoms, the flowers of the garden, and of grain.



"Their keepers drive away their enemies — rats, mice, moths, and birds — and keep the hives clean. For this care and help the bees make a great quantity of honey besides that which they need for themselves. Another time you can find out how bees cause flowers to bear seed. Tony can now tell us something of the hives in which his father's bees are kept."

Tony blushed a little at being called upon so suddenly, but he described the hive very well. "It is a little square, wooden house with two sto-

ries. In the lower part the bees make wax, raise their young bees, and store honey for their own food. In the upper story there are frames which easily slip in and out. The bees fill these with honeycomb, full of honey sealed up tight. There are little glass windows in the sides of the hive, so that one can see when a frame is filled."

Mrs. Burns added that some of the honey is sold in the comb in small frames, but that most of it is thrown out of the comb by swiftly revolving machines. One can never be sure, however, that this extracted article is pure honey, because it is often mixed with other sweets. For the rest she advised the children to find out for themselves the many articles made of beeswax.

USEFUL SINGING BIRDS

I

In summer the orchards, groves, and woods would be lonely and cheerless without the singing birds. Many people do not notice the presence of the musicians in the trees, but if the song birds were suddenly taken away, everybody would feel that something was wrong.

On the Pacific Coast there are few singing birds, and for want of them the groves seem dreary as

one walks among them. For this reason, and for one other reason, a bird society in Oregon, some years ago, brought from Europe about three hundred pairs of what the society called "useful singing birds." Among these were the skylark and the nightingale, of which the poets have sung.

These foreigners in feathers were needed, first, to make joyous music among the voiceless trees, and next, to destroy insects that injure the fields of grain and the orchards of fruit. For the farmers were greatly plagued by butterflies, moths, and their caterpillars. The birds were let loose from their cages, and at once scattered in all directions, building nests and raising their young. The work of the society was reported as very successful.

In the states east of the Rocky Mountains there is no lack of singing birds, except for reasons that this story will refer to.

In a certain uptown school in the city of New York, a class of girls and boys had been enjoying a course of nature study, which brought the class to the subject of singing birds at the beginning of June, when the birds are singing and working.

Central Park is the home of over a hundred kinds of native birds, and the class was only too happy to accept an invitation to visit this protected bird home. So, promptly at a given hour, the chil-

dren were led by their teacher along beds of gay June flowers and grassy lawns, until they came to the Ramble, which is the favorite retreat of the birds.

Out on the green lawn near the Ramble were a great many robins,—vigorous birds more than twice as large as canaries. These lusty robins were hopping, then stopping as if to show their red breasts, and bobbing their heads up and down as they thrust their slender bills into the grass. What were they doing? The teacher explained that it was too late to hear their morning chorus of song, and that the birds were only getting their breakfast of grubs and worms.

"Many grubs, caterpillars, and worms," said the teacher, "are harmful to the grass and trees, and in the orchard and garden they destroy fruits and vegetables. These pests are delicious food for the robins, which are getting their meal early, not only because they are hungry, but because they have learned by experience that 'the early bird gets the worm'; for these crawling things go into hiding as the sun grows hotter."

The party was entering the Ramble, when they heard clear, flutelike notes from a tree top near. "What bird is that?" asked the children.

"It is one of our robins," answered the teacher.

"He has finished his breakfast and is singing for joy. He makes music before work and after work."

II

As they went farther along into the deeper shade of the Ramble, they heard a different note, from a bird moving among the dense foliage. This bird's motions were quick, and it warbled with every change of place.



"Why, that must be another robin," exclaimed Mary Burns, for she was there with her note-book.

"No," replied the teacher, who was at home with birds, "the notes are a little like the robin's, but feebler and more broken. It is an oriole, though he hides himself as yet. He is not so large as the robin, and is called the Baltimore oriole, because his rich colors are those which were worn by Lord Baltimore, the first governor of Maryland."

"There!" cried one of the girls, "I see it! Its

feathers are black and it has an orange-colored breast. Oh, I am sure I have seen the oriole's feathers on the hat of a lady I know."

"Very likely you have," said the teacher; "many beautiful orioles and other birds of gay colors have been killed to adorn ladies' hats."

"It is a shame!" cried Mary. "But why is this bird so shy? Why doesn't it show its gay colors? They are so gorgeous!"



"That is just why it doesn't show itself," answered the teacher. "The robin's dark feathers protect it from notice on the ground, but the flaming coat of the oriole exposes it to danger from hawks and shotguns. You observed how quickly Amy discovered the bird among the leaves, and noticed that the feathers were like those on the hat of her friend. The bird doesn't want to be seen, and the lady does. But the killing of these and thousands of other useful singers is dreadful business."

So the children thought and said, as they sat down on the benches to rest. After a while, the teacher called their attention to what the oriole was

doing; for it was working as well as warbling. "You see it is picking something from the branches and leaves. It is getting its breakfast of caterpillars and insects, as the robins were, only it is hunting in the trees for such food as they took from the ground. But, listen a minute!"

There sounded through the dense shade where they sat the sweetest tune — two notes with an upward slide, and two with a downward cadence. "Pe-wee, pe-wee," sang the bird. The children were charmed, but the teacher told them to keep still. In a moment a little dusky bird, like a canary in size, lighted on a bough in full view, blowing the same tune from its pipe to tell where it was.

Suddenly the pewee flew straight up into the air, and, having caught a flying butterfly, dropped again on the branch, repeating its tune.

"You saw what the pewee did?" said the teacher. "It catches harmful insects in the air, and sings between its captures. You are now acquainted with three of the many useful singing birds. All are birds of the air and of the trees. One gets its food mostly on the ground; one on the trees; and one in the air on the wing. These are but three of the many singers that help us by their song and by their work."

cry went up against these noisy foreigners with wings, when they began to litter the verandas and became so impudent in getting their food.

II

Why, then, were these sparrows brought over from Europe? This was done when the cankerworms and tent caterpillars were trying to destroy our fruit trees and shade trees. "But," said many wise people, "these little ruffians drive away robins and singing birds, and besides, they are seed eaters, not worm eaters." Now that they have battled for their life so long, and are so many and so plucky, we find much to be said in their favor.

Only the other day, I watched a house sparrow wrestling with a cracker which a child had dropped on the pavement near the park. A dog came along and claimed the morsel. The sparrow picked it up and flew to a bush. The dog passed on. The sparrow dropped to the ground and began again to break the cracker. Then a wicked moth flew over. The sparrow darted into the air, caught the moth, swallowed it, and once more attacked the cracker.

The house sparrows are seed eaters, it is true, but like all seed-eating birds they also eat many destructive insects and worms. And they must have worms for their young in the nest, because the bird-

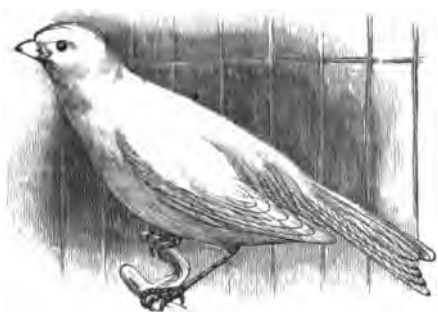
lings cannot eat grain. So, notwithstanding the house sparrow's saucy ways, and his plundering of berries and grapes in their season, he does destroy a great many injurious insects. A naturalist watched a pair carrying food to their family. In half an hour they had brought to the nest over a hundred fly grubs, besides catching fourteen flies on the wing.

To the credit of the house sparrow, it must not be forgotten that he is in town all the year round, and always at work. He cleans the street and the back yard, and takes away the scattered food on which flies and other pests thrive.

But the best thing about these busy scavengers is the way they work and fight for one another. Under the lamp of an electric light pole a pair of sparrows had their nest, and their young were learning to fly. By accident, one of the young birds dropped to the ground, when a dog, the terror of all the other dogs in the neighborhood, sprang after the helpless waif to make a meal of it. Instantly the parent birds attacked the head of the heartless dog and tried to peck his eyes. In another instant their cries of distress brought at least twenty of their comrades to the rescue. Together they pecked the brute on all sides, and in every part, until he was glad to get away for his own safety.

III

Now turn to the canary in the cage. He seems to like his narrow quarters, for he is nearly always in good spirits. The house sparrow's business is that of a street cleaner and insect killer. His squeaking note is in keeping with the rattling, rasping noises of the street; but the canary's business is to sing sweetly, and to say to the family, "Be of good cheer!"



Perhaps you think the canary in the cage is an imprisoned barbarian, caught in the woods, and tamed as the mocking bird and redbird are tamed. This is not so. Its forefathers were captured more than four hundred years ago. Since then, the merry singers have been raised in confinement. They have lost the ways of wild birds, and have gained the habit of singing in all seasons more than any wild bird.

Most of the canaries are bred among the Hartz Mountains, in Germany, and the raising of them makes busy work for thousands of peasants. They labor to produce fine singers, though they are not

careless of fine forms and feathers. In hundreds of cottages, which dot the hills and valleys of the bird district for many miles distant, the work of selecting, mating, and feeding the birds and their young goes on in summer and in winter. Men skilled in the business, and called pickers, spend their time going from house to house to gather up the young singers and bring them to the training school.

To sing the best songs, canaries must be trained. If left to themselves, they will learn to repeat any sounds which they hear frequently. Thus they acquire "choppy" notes that are not pleasant to the ear. The school is carried on by men and women, but the teachers, the "professors," as they are called — who are they? They are feathered, like the pupils, and are the best and most accomplished singers to be found.

The young birds brought in by the pickers are put into cages, each with a "professor," and there they learn to imitate the notes of a real artist, not broken or choppy notes, but musical, flowing, and sweet. Birds so trained bring high prices.

Many people are also employed in making the small wicker cages in which the birds are sent to market — to other countries in Europe, and to America.

Healthy birds only are shipped to America, and

the care of fifteen hundred singers on the voyage is a hard task for one skillful man. He must rise early in the morning to clean the cages and provide breakfast for these hundreds of hungry bills. He must watch every sign of disease. He must guard against the ship rats, which find the place of the birds by their song and chirping, but care nothing for their music — only for their precious little bodies. So the bird tender has long, anxious work and but little sleep.

FOWLS OF THE FARM

I

All animals that have feathers are birds. There are birds of the air, birds of the land, and birds of the water. They lay eggs, as do fishes, snakes, and flies. Birds are very different from sheep, cows, dogs, and from all other animals that give milk but do not lay eggs.

The horse and cow eat large food, large quantities of grass, bundles of hay, and boxes of grain. But there is small food that would go to waste were it not for the birds. They eat the kernels of grain which the horse scatters, the seeds blown everywhere by the wind, and the insects that hide in the cornfield and in the garden.

For this purpose birds have a peculiar set of tools. A cow cannot pick up a single kernel of corn, nor can a dog catch a grasshopper; but a chicken can do both. It has a sharp, pointed bill for picking up small things, and scratching claws for uncovering worms in the ground. The duck has a flat bill to scoop up food from the muddy bottom of a pond, and webbed feet to paddle with.



Birds yield some peculiar products which no other animals give. Cows mow the grass and give us meat, milk, and leather. Chickens pick up the small food and give us meat, eggs, and feathers. We need the chickens, turkeys, ducks, and geese; we need their meat, their eggs, and their feathers.

Eggs are wonderful food. They take the place of both meat and milk. After they have been laid they are easily gathered, handled, packed, transported, and cooked. Have you ever tried to think how many eggs the people of the United States eat in one day? They eat a greater number of eggs in one day than you can count in a whole year.

Feathers are light, warm, and beautiful. They are in every house, and very near to our dreams. They are on the girls' hats. The Red Man's king was crowned with feathers, and the gay garments of his people were adorned with them. Far away in the cold regions of the North the Eskimos are busy plucking the softest of feathers from the nests of the eider duck. As many people are hunting and raising African ostriches for their delicate plumes. These are the most costly feathers.

But the birds of the world could never supply the fowls, eggs, and feathers that are called for, if skill and industry did not help and improve the birds. So the poultry business has grown immensely, and fowls are made to produce very much more than they did in early times. To see how this is done, take a peep at a poultry farm.

II

Mr. Grant laid out, at great expense, poultry yards, chicken houses, and duck houses. Tony took such a deep interest in the enterprise that his father allowed the boy to think it was his own; and indeed Tony worked very hard and talked rather large about his "business." When everything was in running order he invited Johnny and Mary to visit him.

How delighted they were with the sight! Tony, like a general manager, showed them through the whole "business." They stepped into the dark nest room where the hens stole softly in and laid their eggs in boxes lined with clean earth and straw. For the first time they heard a hen cackle with joy, after she had laid her egg, and a rooster answer her music with a louder, more melodious note.

Then they went into the hatching room where large hens were sitting on their nests. Tony lifted one from her nest and uncovered sixteen eggs. "What!" exclaimed Mary, "so many eggs in one nest? How long does the hen sit before the chicks are hatched?"

Tony explained that it took three weeks for hens' eggs to hatch; and while Johnny looked on in silent interest, Mary said: "How strange it is! The hens must get very hungry and tired sitting still so long." She touched the eggs and found them warm.

"This way," said Tony, opening a door looking out upon a small yard where were food, water, and a heap of sand. "Here," said he, "the hens take a recess for an hour or so every day — eat and drink and roll in the sand. Now let me show you a hen that doesn't get tired."

The children were full of curiosity as they has-

tened to enter another hatching room. There they saw nicely finished cabinets, like show cases, with glass in the sides. They looked through the glass and saw eggs arranged in rows; tiny chicks and empty shells; chicks with their heads just out of the shell; and little bills sticking through other shells. Tony had wisely planned for their visit at hatching time.

The children were astonished. Johnny was quite startled for him. "What is this?" he asked. "This isn't a hen! You must be joking."

"But where did you get all these eggs?" Mary wanted to know. "Your hens didn't lay them, I am sure."

"No, I buy the eggs of other farmers," answered Tony. "If real hens had to hatch the eggs, there wouldn't be chickens enough for the people to eat; and then if hens had to do all the hatching, there would not be enough left to lay all the eggs the people want. You see if we do not let a hen sit, she goes on laying eggs, and perhaps lays a hundred and fifty in a year. Yes, this is my hen that doesn't grow tired; we call her an incubator, and these four incubators hold six hundred eggs."

"A jolly old hen is this," said Johnny, laughing, "and you don't have to feed her."

"Oh, yes, I do," said Tony, quickly. "Look

here!" He then showed them a lamp, with a thermometer attached, that is kept burning for three weeks, to keep the incubator at the same degree of heat. "This is the way the old hen is fed," he added.

III

Then the visitors were led to the coops where were hens brooding little chicks. Mary was deeply affected by seeing the old hens coddle the young things under their wings. "But, Tony!" she cried, "what do those poor little incubator chicks do?"



So back they went to the hatching house. Tony opened one of the incubators and put three little chicks, now ready to be taken away, into Mary's hands. Then he led his friends into still another room, where steam pipes were laid a little above the floor. There were many little ones already nestling under the pipes, and Mary put hers there.

"This is the mother," said Tony. "It's a steam mother, and is just as good as one with feathers and wings."

After visiting the ducks at the pond, the geese in their pasture, eating grass, and the turkeys roaming with their broods over the meadows, the children returned to the house. Here they met Tony's father, who, he said, helped him in the business. From him they learned how ducks are fattened for market; that geese live long lives, make a great deal of noise while they live, and that their feathers are plucked twice a year.



After Mr. Grant had answered many questions he took from his pocket a small pearl-handled knife with a sharp blade. "What do you call such a knife?" he asked.

"A penknife," said Johnny, promptly.

"Why do you call it a penknife?" asked Mr. Grant.

To this there was no answer, and Mr. Grant said, "I'll tell you why." He took from a vase a large goose quill, — a feather that had been pulled

from the wing of a goose, — and whittled the end of it into a pen.

"There, Johnny," he said, "take this home with you, and you will find that it will write very well. This knife is not used to make pens nowadays, for our pens are made of steel, but its name tells an interesting history. When my father was a boy, all pens were made from quills, and with a penknife. The children at school had to learn how to make their own pens. But the geese made the quills. So you see that geese and feathers have done a great-deal to educate the world."

OSTRICH FARMS

The most graceful and costly plumes come from the African ostrich, just as the best ivory comes from the African elephant. The ostrich is the largest of all birds, so large that a boy can ride him if he can get on the bird's back, and sometimes he can. It is a swift runner, and is more than a match for a swift horse. When in full speed its steps are twenty feet long.

No animal with feathers is more famous; and it seems rather odd that so mighty a bird should get its fame on account of the feathers on its wings and tail, rather than for its strength and speed.

Thousands of years ago ostrich plumes were worn by the kings of Egypt, and were made into splendid fans for the ladies of Rome. Even to this day the native kings and chiefs of Africa adorn themselves with these feathers, and they are so brilliant, so glossy, and so delicately curled that they are very much in demand for ladies' dress the world over.

It is troublesome to get them, however, for wild ostriches are not easily caught. Many horses have been tired out, one after another, running down a single bird. So the idea was started to catch and confine a few of them, and otherwise treat them as geese are treated.



Ostrich farms were first tried in South Africa, and from them were brought over the few birds with which American farms were begun in Florida and Southern California. These poor pilgrims were seasick during the whole voyage to California. Many of them died on shipboard, and those

that were left died soon after they were landed. Fortunately some eggs had been laid, and from these were hatched healthy, happy creatures that were never seasick or homesick.

In their native home, ostriches travel a dozen miles or more daily in search of grass to eat. On the farm the grass or hay is brought to them cut up fine. The wild ostrich hen lays one huge egg, in a sandy hole, every other day. The hatching begins when fifteen eggs have been laid, and a pair of birds take turns in brooding them. When an ostrich's egg is placed beside a hen's egg, its great size is seen. It weighs about three pounds.

On the farm the farmer takes a hand in the hatching. As soon as the ostrich hen has laid an egg, the farmer removes it from the nest. The hen, though a stupid bird, never gives up her dream of a happy brood of chicks, and keeps on laying until she has laid perhaps eighty eggs. From time to time the eggs are placed in an incubator, and in forty days the downy chicks are hatched. Their life goes on smoothly for three years, or until their feathers grow.

The choice plumes of the grown ostrich adorn his wings and tail. He is unwilling to part with them, and, like a vicious horse, defends them by kicking with his powerful feet. Placed in a box stall he grows furious. But when a stocking has been

drawn over his head and eyes, the bird submits quietly to being plucked, which fortunately gives little pain, as the plumes are taken with shears.

An ostrich is not full grown until it is four years old, but it may live eighty years. A good bird produces a pound of feathers each year, but that pound is worth sixty dollars. Preparing the feathers for the hats, capes, and boas of women is a great business in itself. The cleaning, the starching, the dyeing, and the piecing together of small feathers so as to make large plumes, is a work of skill and art.



Besides the profitable crop of feathers produced, the ostrich farm is an amusing show for the visitor. The performers are such odd, awkward, gawky creatures. They march and whirl, and then suddenly break into a ludicrous dance or waltz. Again they stretch their long necks over the fence and pick a ribbon or a flower from a lady's hat, or a lighted cigar from

a man's lips. These, with nails, screws, and buttons, they swallow as if they were dainty morsels.

The only time an ostrich allows itself to be petted is during its chickhood, from the moment it leaves the eggshell until it gets its first real feathers in the place of its bristling down.

"There are not many young animals prettier than the ostrich chick," says an observer. "It has such a sweet, innocent baby face, such large eyes, and such a plump, round little body. All its movements are comical, and there is an air of conceit about the tiny creature which is most amusing."

ARE ANY ANIMALS USELESS?

I

It would take too long to tell all that the children and their helpers said after the question was asked, Are any animals useless? The children agreed that the growling, ferocious beasts, such as tigers, bears, and wolves, and the biting, stinging things, such as flies, fleas, mosquitoes, and spiders, do nothing but harm. They resolved to take the question to Uncle Frank.

Uncle Frank was a genial old man, with long, flowing gray hair. He was a great student, and spent most of the time in his "den," as he called it,

surrounded by piles of books and papers. But every bright day he sat in the park where the children of the neighborhood flocked around him to listen to his wise and odd talk.

He was sitting there, with his hat off, under his large umbrella, when the girls and boys asked him the question. He smiled, and his eyes brightened, for he had a subject before him that was near his heart.

"I see," he said, "you are puzzled as I once was. I will try to fill a few nutshells which you may carry home. What you know about the big animals which you think are useless you have got by reading. But some of the stinging insects you know by experience. Let us begin with these." Then Uncle Frank began very bluntly: —

"One good thing these pests do is to make people scratch themselves," he said.

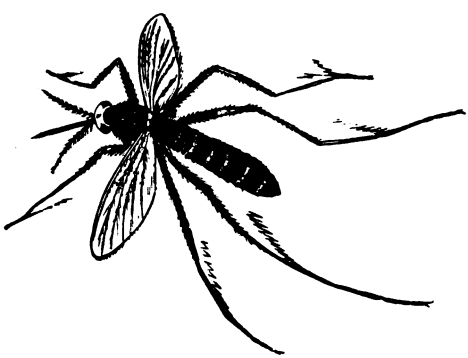
"Oh, oh!" cried the children in astonishment, for this was the very thing that led them to hate the insects. Uncle Frank explained.

"Not for you, but for some people, it is necessary to fret the skin with the finger nails. To live and to be well, the pores or little holes in the skin must be kept open. There are people in Africa, and some in America, too, who scarcely ever wash themselves, or rub their skin with coarse towels, as

you do. The biting insects compel such people to open the little chimneys in their skins by scratching."

"Then why do the horrid things bite *us?*" asked the children.

"Plain enough," replied Uncle Frank. "It is a law of nature that those who do well must often suffer with those who do ill. The mosquito only does as her nature tells her to. She has fine tools on her head to pierce the skin with. She feeds on blood, and she is going to get the first blood she finds, whether under a clean skin or a dirty skin. Of course she must like to taste of a soft little white hand, like this one I am holding in mine. But she is honest. She gives you warning of her visit by singing in your ears a sweet, lovely tune."



"An awful tune!" exclaimed the children; "it is as bad as the bite. It's horrible!" cried one of them. "When I hear the music I know the bite is coming, and I get dreadfully nervous."

II

"Well," said Uncle Frank, joining in the laughter, "I will say some good, sober words for the mosquito, though it is said that she spreads disease by her bite. I must tell you that plants and animals were on the earth a long, long time before men were born. During all that period, plants and animals were growing and working, living and dying, and making a home for men, who were to come.

"Plants grow by feeding on something in the ground and in the air; animals by feeding on plants and on other animals. It is natural for plants and animals to die, and their death has done much to prepare the earth for men.

"No animals ever lived, I think, that were not at some time useful, though some now seem to be useless, and we may have to get rid of them. We must get rid of mosquitoes if we can. But the death of some animals, as well as of some plants, has done good. The coal we burn is made of dead plants, and one kind of stone for building houses is composed of very small water animals.

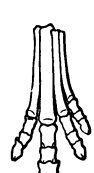
"It is the flesh eaters and blood suckers that you dislike so much. I think I can show you, however, that even they have done good for the world in the past, and are doing good now.

"You know that trees and small plants, like grass, grow from seeds. But how was the seed scattered so that the forests spread over the hills and the grass over the hills and plains? Some bird, perhaps a pigeon, filled its crop with acorns, and some ground bird, like the quail, filled its stomach with grass seed.

"Then an eagle or a hawk sailing overhead pounced upon the seed eater and carried it off to some distant hill to feast upon, like little Jack Horner eating his Christmas pie. The ravenous bird wanted only the flesh of his victim, and so he scattered the seeds on the ground, where they sprouted and grew into oaks and grass.

"Look at those horses trotting so briskly on the hard pavements. Not a foot in the world could do such work so well as the horse's hard, horny hoof. How firmly it holds the steel shoe. Do you know what sort of an animal our horses and tough little donkeys came from? You don't know? Then I will tell you.

"It was a piglike animal about the size of a half-grown sheep, and its foot ended in a claw with four toes. This ugly animal lived in a swampy jungle. Its clawed feet did good service in the soft ground filled with brush and water plants. All sorts of animals, great



and small, were there, including your mosquito friends and other horrid creatures.

"The pygmy horse and other plant eaters were game and food for the flesh eaters. So the mosquitoes worried and stung, and the wild cats and wild dogs harried and killed, until the strongest of the pygmies were driven out on the grassy plains and the rocky hills. Then what happened?

"Having a chance to run on the harder ground, the feet of the animals began to change, and to



become hard, just as your soft hands would change if they were put to handling spades and stones. After a very long time, and many generations had lived and died, the descendants of the pygmy horses lost all their toes except one. The other toes ceased to grow because there was no use for them.

"That one toe grew harder and rounder as the ages rolled on, and as the descendants of the ugly little animal with claws had more room and better food than their forefathers, they grew more comely. Those living on level ground became horses, and those living on the hilly, rocky places became the hardy donkeys, which carry burdens over mountains and rocks where horses cannot go. What seemed to be evil, ages and ages ago, was only working for good in the end.

III

"Had not the flesh eaters driven the pygmy horses out of the jungles, I am afraid we should not have the true horses, the noble animals that trot on the hard pavements."

"But, Uncle Frank," asked the children, "isn't it dreadful that the animals have always been killing one another?"

"Ah, that is a serious question," answered Uncle Frank. "You have seen how much good comes from taking the life of some kinds of animals. The great question is, Who has the right to kill, and how, and when?

"Tigers and wolves have a right to kill and eat other animals because the wild cats and dogs are flesh eaters. They are made with teeth that cannot chew and stomachs that cannot digest plant food.

"Men, too, have a right to kill animals for food and other useful purposes, if they take the life of these creatures with the least possible pain. But hunting animals for sport is wrong. The shooting of pigeons by the gun clubs, merely for sport, leaving the poor things in torture, is horrible.

"Now a word more about your dear friends, the biting insects," said Uncle Frank, picking up his newspaper and laying it down again.

"This would be a poor world indeed to train

good little men and women in, if roses had no thorns, if there were no storms and hardships, and if all were sunshine, flowers, rest, and no work. Difficulty and annoyance are our best friends. We should grow lazy and worthless without them.

"Some of our best lessons are taught us through stings and bites. Mosquitoes, fleas, flies, and ticks have not yet done their work in the world. They are always saying to us, 'Keep clean!' Mosquitoes are hatched in still water, and the young are well named 'wigglers.' They are restless, lively little fellows, and they begin at once to purify the water in which they swim.

"Flies and fleas are hatched in rubbish and decaying matter. They, with the mosquitoes, say to us, 'Keep the earth clean! Drain your swamps, and make them smile with corn and flowers; keep your streets clean, your sewers in order, and burn your rubbish. By so doing you destroy our cradles, and we can pester you no longer.'"



A Fly seen through a Microscope

With these parting words Uncle Frank picked up his newspaper. As the children slowly and reluctantly went away, with many a "Thank you,

Uncle Frank," his very person echoed the words he had spoken, for he was dressed in white linen, as clean as the driven snow.

THE PEARL MAKERS

I

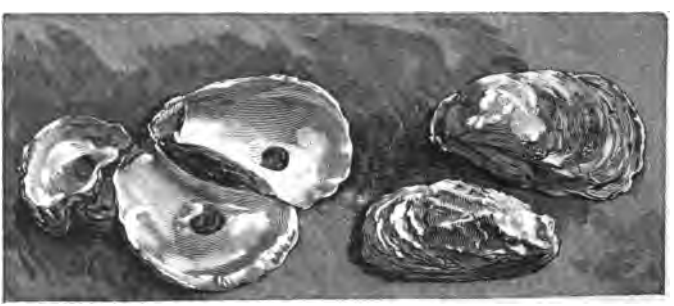
Before long you will study geography. Then you will learn that the earth is covered with three times as much water as land. The rivers, the lakes, and the oceans are as necessary to make the earth a home for man as is the land. This great quantity of water is needed to make rain clouds and to keep the air from becoming too hot or too cold.

But is that all? What is within these great masses and running currents of water? They are the homes of countless creatures which furnish either food, or useful articles, or beautiful ornaments for men. Nearly all the people of the world eat fish, and without fish many peoples could not have lived at all.

The ocean, like the land, is not all taken up by harmless animals. Big fish eat up little fish, and there are great man-eating sharks and devilfish, which make trouble in the ocean.

This story will tell only of some peaceful animals of the sea. You know something of our friends, the

oyster and the clam. When the oyster on the half shell is on the table, only one thing is thought of, that the oyster is good to eat. Who ever thinks about the soft, satin mantle, or rain coat, that wraps the delicious thing around? Or who looks at the half shell itself to admire the rainbow colors in its smooth lining? Or does any one try to find the foot (if it has one) or the eyes of the oyster?



It is true that our common oyster shell has a rather dull, sober lining. But there is one kind of oyster with a brilliant, beautiful lining which is called mother-of-pearl, and in some shells of this kind are found jewels of pearl, those pearls of great price which for thousands of years have been treasured like gold and diamonds.

The finest of these pearl oysters are taken near the shores of Ceylon, in the Indian Ocean. The precious pearl, when at its best, is round, about the

size of a pea, and of the softest white. Many thousands of pearl oysters may be opened before one is found which contains the fair jewel. This is why the pearl is so costly.

It is the glory of the oyster that she is more than food. She is the mother of the paperknife and the elegant cardcase, and of those eardrops of Cleopatra which were valued at nearly half a million dollars. The oyster does not know how great an artist she is. See, now, how she does her fine work!





II

That delicate satin mantle, which causes the oyster on the half shell to slip from the fork, really builds the shell. The young oyster shows the shell growing, ring after ring, from the mantle, and the rainbow lining is its first

fine work. Then, sometimes, but not often, there lodges within this cloak a grain of sand, or one of the oyster's eggs.

This obstruction, which, for the animal's comfort, ought not to be there, irritates the mantle and turns the oyster into an artist and a jeweler. She gathers at this painful point her choicest material, and makes a precious pearl. A little suffering brings to pass the glory of the pearl oyster.

Clams, and their near relations, the mussels, are of the same class of water animals as the oyster. One kind of mussel produces the mother of pearl, and occasionally the precious pearl. These pearl mussels live in fresh water, and are most abundant in the upper Mississippi River. Most of the pearl shell used in the manufactories comes from this region.

Among thousands of mussels perhaps one may be found which, like the pearl oyster, contains a precious pearl. But the chief reason why hundreds of men rake the river bottom for these shell animals is because the factories want the pearl lining of the shells. The mussel itself is not good for food.

After the shells have been dried they go to the shops, where the rough outside is ground away, and the inner lining is polished by wheels driven by steam. Then the shining material is made into

buttons of many shapes and sizes; into the inlaid backs of expensive brushes; into knife handles, collar studs, and scarf pins, buckles, earrings, and bracelets. To think that all this convenience and beauty comes from the muddy river bottom, and from clams!

A rare kind of pearly shell covers the Chinese window-oyster. This oyster abounds near Manilla, as well as in other Asiatic waters, and the natives of the Philippines use the shell for window glass. The shell is very thin, and when ground off and polished, printed words can be read through it. The window-oyster is one of the marvels of the sea.

OYSTER AND SPONGE

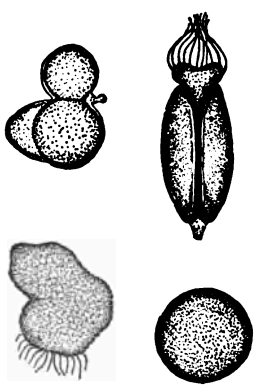
I

A living oyster may be seen at almost any time by stepping into a restaurant, but a living sponge is rarely seen except by the diver who takes it from the bottom of the sea. The two animals are not alike in form. In two ways they are alike; both lay eggs, and both spend the most of their lives fastened to the sea bottom.

They are also alike in what they do not have, for neither of them has bones, legs, fins, or wings. They appear to have no weapons to defend themselves

with. It is best for them, therefore, that they keep away from the ravenous rabble of water animals with teeth and jaws.

The oyster has a soft body within a pair of hard shells that open and close like the covers of a book. That which we call a sponge is a bunch of fine-spun, flinty fiber, full of holes. The living sponge which the diver catches is more than this. It has a coat of soft flesh covering all parts and lining all the holes of our lifeless bunch of springy fiber. Remove the hard shell of the oyster and you have the soft body for food. The fisherman strips off and squeezes out the soft body of the sponge, and gives you the useful and wonderful utensil for cleaning.

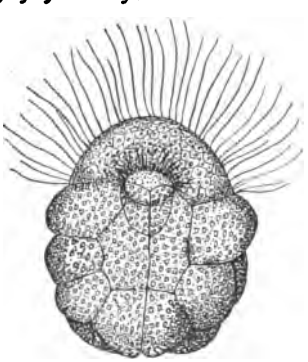


A young oyster, hatched from an egg, is called a spat. Until it is a week old the spat has a lively time paddling itself about by long hairs attached to its body. Its only covering is a delicate mantle as soft as silk. A shell begins to grow from the mantle, and, if still alive, the innocent swimmer settles down and fastens itself, perhaps to an old oyster shell, on the bottom.

When the shell has grown around it, the spat is at ease. It opens the shell to let in small food plants that float in the water, closing the shell when danger approaches. But how does it know when an enemy comes near? The shell opens, and the fringe of the mantle slips out. The eyes are in this fringe. They see the danger, and the shell instantly closes. In no other way could the oyster be safe or be able to preserve and fatten the soft, delicate body so delicious for human food.

II

Likewise the sponge is hatched from an egg, and with its hair paddles swims gayly away, but not for long. It, too, for the sake of its life, must get to the bottom and make itself fast. There it grows, sometimes in the form of a vase. But how does the sponge get its food? It is an animal of a lower grade than the oyster, and has no eyes, no real mouth, and no stomach, as the oyster has.



Being so made, the sponge must take the food that floats to it in the water. Having no stomach to digest what is eaten, the food directly enters all

parts of its body. Hence its body is full of holes, and each hole acts as a mouth to take in food. It has these mouths on all sides to catch the small plants that float around it.

Could anything be better for the life of this strangely made animal than the frame, or skeleton, which finds its way to the drug store and the bath room? It is so elastic, so springy, that it swells and opens to take in water and food, and then contracts, squeezing out the water and what remains of the food. Very few animals are so active while they are standing or sitting.

This is the story of the oyster and the sponge: The way in which the oyster lives, gets its food, and protects itself, is what makes its soft body so good for food. The living sponge fills itself with water and food, and, if it will, squeezes both out. In the same manner the dead sponge in a human hand is filled with water and soap, wipes up dust and dirt, and throws them out.

How oysters are raised in beds along the sea-coast, and how they are taken and brought to market, any oyster dealer can tell you. Find out for yourself the many uses of the sponge in the house, the stable, the tailor's shop, and the business office. The business of sponge fishing is a longer and more eventful story.

DIVING FOR SPONGES

I

Sponges live in the waters of the seacoast, where the climate is warm. They differ in size, some being as large as a man's head, and some as small



Sorting sponges in the Bahamas

as a squirrel's. The very large horse sponge grows in the Mediterranean Sea, where also the finest and best sponges live. The common and coarser kinds grow on the coasts of the Bahama Islands and Florida.

The great center of sponge fishing is among the

Greek islands of the Mediterranean, and the Greek people are the most accomplished sponge divers. The animals have been taken from about these islands for so long a time, and so many more sponges are needed the world over, that the divers must continually go down in deeper water. Therefore the hardships and dangers of sponge diving are becoming greater and greater.

In some places sponges are taken with spears and dragnets, but in such fishing there is danger of tearing and spoiling the sponges. The Greek sponge-fishermen are divers, of whom there are two kinds, plain divers and machine divers.

The plain diver strips off his heavy clothes, hangs a bag around his neck to hold his catch, and takes a marble slab of forty pounds' weight in his hands. He then plunges, head foremost, into the water, and is swiftly carried to the bottom by the weight in his hands. A cord is fastened to him, which is also tied to the boat from which he dives. This diver seldom, if ever, remains five minutes under the surface of the water, for he must hold his breath all the time.

The machine diver is inclosed in a water-tight dress, fitted loosely to his head, arms, and legs. The part covering his head is of metal, and has openings set with glass, so that the man can see

while under the water. A very ugly-looking ogre is this diving suit. It is called a machine because its parts are made to move. Air is pumped into it from the boat above through a long rubber hose.

A signal cord connects the diver with the boat. Besides articles for gathering the sponges, he carries a lance to fight sharks with — the man-eating sharks — very large and ferocious fish, with huge mouths and terrible teeth. These enemies have learned the ways of the diver, who often hears their dreadful cluck when he strikes the bottom. This diver sometimes stays under water fifteen minutes.

II

Sponge divers, whether naked or in diving suits, feel that they take their lives in their hands when they go down, as they sometimes do, ninety feet under the surface of the water. They act the part of heroes. They must be quick about their work. Much depends on the effort of a few minutes.

The risk of life and the dangers are so many and so fearful that before the divers begin their day's work religious services are held; and women and children, with sad faces, bid good-by to husbands, fathers, and brothers who are making ready to dive.

Sharks are not the only enemies of the diver. The swordfish sometimes attacks him, and the

sponge itself is infested with a worm which stings the bodies of the naked divers, wounding them as if by the point of a sword. Then, too, the diver suffers from the great weight of the water pressing upon him, so that he is often stricken with paralysis. Many hundreds of Greek divers lose their lives in this dangerous business every year.

It takes something of a hero to be a sponge diver, and this, perhaps, is what makes the work fascinating in spite of its difficulties and dangers. A large number of the Greek people on the islands are engaged in this kind of fishing, and the highest ambition of every boy is to be a diver.

The boys, as soon as they can toddle in water and swim, begin to leap and plunge into the sea. They practice staying under the surface and holding their breath the longest possible time. As they grow older, they go out in the boats with the sponge fishers, and take turns in sinking down to the sponge beds, in the regular fashion of the old diver. At twenty years of age, if he is expert, the young man becomes a regular sponge diver.

Families all over the civilized world use sponges, but few ever think of the cost at which they get these comforts. Soon after the sponges are brought to the fisherman's boat they are beaten so as to loosen the flesh from the skeleton, and are then tied

into bunches and allowed to trail in the water as the boat moves homeward. After the catch is sold, the sponges are sent to factories, where they are thoroughly cleansed, clipped, sorted, and made ready for use.

THE DESPISED EARTHWORM

I

Throughout the whole year the Bonny Club had met nearly every week, except during the school vacations. Mary Burns had contrived to make each meeting interesting by mingling study, play, and music. She was industrious and quite advanced



for a girl of her age, but she always acknowledged that she had been greatly helped by her mother and her teacher, both of whom were deeply interested in nature study.

The last meeting of the year was a red-letter day, as Mrs. Burns called it, referring to the old time when a festival was marked with red letters in the almanac. The programme of exercises cannot be given here. It is enough to say that it pleased the children. Of course Tony Grant was there.

Tony was like all other children. Though he was with animals every day, he did not know how necessary they are to human life until he was called on to answer questions. After that he took new interest in his animal companions, and began to put questions to his intelligent father. He was notified that the earthworm would be discussed at this meeting, but Mary said beforehand that Tony would know nothing about the earthworm except that it is good for fish bait.

And so it proved. Tony, however, knew as much about this subject as many older people. Indeed he uttered contempt for the animal, and said that his chickens would not touch it unless they were half starved. But earthworms are to be seen in the city; and as Mrs. Burns and the children were walking on the pavement, which was bordered with grass, one crawled on to the path before them.

It appeared to be about eight inches long, but when Johnny touched it with his finger the worm drew itself together in a second like a Japanese lantern. It was then not half so long and much larger around. Having taken it home, they watched it again, and could see the rings which composed its body. Placing it under a magnifying glass, they could see, attached to each ring, very small hooks which serve as feet and help the worm to move.

At this meeting of the club Mrs. Burns was led, by Tony's remark, to say something about the use of the angleworm, as the earthworm is usually called, for fish bait. "This fish bait of Tony's," she said, "is a very lively thing, as all fishermen know who dig in the ground for it. They find it in rich, damp soil where it eats dirt that is mixed with decaying vegetable matter. To get food and moisture it burrows holes everywhere in the ground.

II

"Angleworms are not apt to be found where the soil has become worn out and poor from long raising of crops. This is the case in a large part of New England. But the very states where the worms are scarce contain the favorite fishing resorts of sportsmen. Where, then, shall the anglers get their bait? This was a serious question with hundreds of fishermen until a shrewd man in Maine started an angleworm farm. A queer idea, wasn't it?

"One thing you have learned. When men keep animals for profit they must do for them many things which the animals did before for themselves. Tony gets more eggs and chickens by providing the fowls with food, and by hatching the eggs in an incubator. In the same way the man in Maine

managed the angleworms. By feeding them he saved them the labor of burrowing in the ground for food. He built in the ground large reservoirs lined with cement, which made them smooth and tight, so that the worms could not crawl out. He had drains to carry off the waste water, and pipes to let in fresh water, for these worms cannot live except where there is moisture.

"How did he provide food for them? Instead of filling the reservoirs with dirt, he filled them with old bran from the grain mills. In this material the worms had no hard boring to do, and they were as happy as pigs in clover. Besides the bran, they were fed with grass and lettuce. The worms had nothing to do but to eat and to lay their eggs.

"The result was that the angleworms increased so fast that soon there were millions of them. After they were full grown they were packed alive in wet moss, and were shipped wherever there was a demand for them. But this use of angleworms seems very small when compared with their great work which Mary is going to tell about."

Yes, Mary had prepared an essay, which her teacher had corrected to make it express just what Mary wished to say. And here is that part of the composition which describes the greater work of the earthworm, after a paragraph of introduction.

III

"The little men and women of the Bonny Club have learned how nearly all kinds of animals are working for us. We cannot by ourselves make wool, skins, feathers, horn, ivory, pearl, silk thread, meat, milk, eggs, or honey. These things are made for us by sheep, cattle, chickens, pigs, elephants, oysters, caterpillars, and many other animals, but it requires the work and skill of men to make the gifts of animals fit for use.

"Among the very small animals that help us is the silkworm; but the most wonderful of all, whether big or little, is one that we despise and don't like to touch. It is the earthworm, and the boys use it for fish bait. They call it the angleworm, because fishers are called anglers. What does it do for us? Or what has it done for the world?

"The farmer cannot raise corn or wheat unless he first plows the ground, and the ground could not be plowed, nor would anything grow in it, if it were not loose and rich. Earthworms make the ground loose. They burrow holes in it to make their nests, and to find food and water. They eat the dirt which contains vegetable food and then cast it out at the top of the ground, thus raising the ground higher. In this way they have covered a large part of the earth with rich soil. They are the makers of

soil in which the plants grow that are food for larger animals.

"Earthworms were the first plows. They plowed with their sharp, gimlet noses and invisible feet long before the Egyptians used pigs for plows. Even now they often throw up, in one summer, a quart of rich soil on every square foot of a large garden. They do more than this. By burrowing under large stones they help them to sink below the reach of the farmer's plow. We are told, moreover, that the ruins of ancient cities were buried in this way by earthworms.

"So we must feel thankful to these humble and despised crawling creatures. They have made the earth's surface rich and smooth. They deserve more praise than all other animals, because they have prepared the earth for plants, animals, and men. All the soil that makes plants grow has passed through their little bodies. Without the earthworms there would be few trees, and no grain, no fruit, no animals of the land, and no men.

"A great man, Mr. Darwin, says, 'It may be doubtful whether there are many other animals which have played so important a part in the history of the world as have these lowly creatures.'"

ELEMENTARY NATURE STUDY

Abbott's A Boy on a Farm . . . . 45 cents
Two stories by Jacob Abbott, revised, and in new and attractive form. They are admirably suited for young readers. The illustrations are numerous and pleasing.

Bartlett's Animals at Home . . . . 45 cents
The object of these stories is to arouse the interest of children in certain representative individual animals, and by so doing to awaken a love for Natural History in general. The illustrations are attractive and true to life.

Bradish's Stories of Country Life . . . 40 cents
These recollections of a childhood spent on a northwestern farm aim to emphasize the attractiveness of life in the country, and to add to its charm by awakening an intelligent interest in its many activities.

Dana's Plants and Their Children . . . 65 cents
A series of easy lessons on the wonders of Plant Life, as entertaining for children as stories. These studies in nature are not only interesting and instructive in themselves, but they teach the child to see, to think, and to observe for himself.

Holder's Stories of Animal Life . . . 60 cents
This book is intended to serve either as a first book on Zoölogy or as a supplementary reader. The author has aimed to create in young students an enthusiastic interest in Nature Study by presenting some of the most remarkable phases of animal life.

Kelly's Short Stories of Our Shy Neighbors . 50 cents
This book furnishes children with entertaining and instructive reading in the field of Natural History. It tells about the living creatures that dwell near us and yet are oftentimes strangers. It does this in the form of stories, written in a pleasing and attractive style, and copiously illustrated.

Monteith's Some Useful Animals . . . 50 cents
The subjects here treated assist both in Nature Study and in learning to read. The moral lessons derived from the actions of animals are vivid and engaging, and much useful and interesting information is imparted.

Needham's Outdoor Studies . . . . 40 cents
This book is suitable for pupils in the intermediate or grammar grades. May be used as a guide for field work as well as a reader in Nature Study, and it will pave the way for more advanced text-book study and for laboratory work in the higher grades.

Pyle's Stories of Humble Friends . . . 50 cents
These stories are about animals and birds familiar to the children. They are simple in style and sympathetic in treatment. The many pictures, drawn by the author, are vividly illustrative of the incidents described.

Stokes s Ten Common Trees . . . . 40 cents
A series of simple nature lessons for young children, familiarly treating and giving a few definite impressions of what trees are and how they live.

AMERICAN BOOK COMPANY

Burnet's Zoölogy

FOR

HIGH SCHOOLS AND ACADEMIES

BY

MARGARETTA BURNET
Teacher of Zoölogy, Woodward High School, Cincinnati, O.

Cloth, 12mo, 216 pages. Illustrated. Price, 75 cents

This new text-book on Zoölogy is intended for classes in High Schools, Academies, and other Secondary Schools. While sufficiently elementary for beginners in the study it is full and comprehensive enough for students pursuing a regular course in the Natural Sciences. It has been prepared by a practical teacher, and is the direct result of school-room experience, field observation and laboratory practice.

The design of the book is to give a good general knowledge of the subject of Zoölogy, to cultivate an interest in nature study, and to encourage the pupil to observe and to compare for himself and then to arrange and classify his knowledge. Only typical or principal forms are described, and in their description only such technical terms are used as are necessary, and these are carefully defined.

Each subject is fully illustrated, the illustrations being selected and arranged to aid the pupil in understanding the structure of each form.

Copies of Burnet's School Zoölogy will be sent prepaid to any address, on receipt of the price, by the Publishers:

American Book Company

New York ◦ Cincinnati ◦ Chicago

Birds of the United States

A Manual for the Identification of Species East of the Rocky Mountains

By AUSTIN C. APGAR
Author of "Trees of the Northern United States," etc.

Cloth, 12mo, 415 pages, with numerous illustrations. Price, $2.00

The object of this book is to encourage the study of Birds by making it a pleasant and easy task. The treatment, while thoroughly scientific and accurate, is interesting and popular in form and attractive to the reader or student. It covers the following divisions and subjects:

PART I. A general description of Birds and an explanation of the technical terms used by ornithologists.

PART II. Classification and description of each species with Key.

PART III. The study of Birds in the field, with Key for their identification.

PART IV. Preparation of Bird specimens.

The descriptions of the several species have been prepared with great care and present several advantages over those in other books. They are short and so expressed that they may be recalled readily while looking at the bird. They are thus especially adapted for field use. The illustrations were drawn especially for this work. Their number, scientific accuracy, and careful execution add much to the value and interest of the book. The general Key to Land and Water Birds and a very full index make the book convenient and serviceable both for the study and for field work.

Apgar's Birds of the United States will be sent, prepaid, to any address on receipt of the price by the Publishers:

American Book Company

NEW YORK • CINCINNATI • CHICAGO

Baldwin's School Readers

By JAMES BALDWIN

Editor of "Harper's Readers," Author of "Old Greek Stories," "Old Stories of the East," etc.

In method and in subject matter, as well as in artistic and mechanical execution, these new readers establish an ideal standard, equally well adapted for city and country schools. They possess many original and meritorious features which are in accord with the most approved methods of instruction, and which will commend them to the best teachers and the best schools. The illustrations are an important feature of the books, and are the work of the best artists. They are not merely pictures inserted for the purpose of ornament, but are intended to assist in making the reading exercises both interesting and instructive.

BALDWIN'S SCHOOL READERS—EIGHT BOOK EDITION

First Year,	128 pp. 25 cents	Fifth Year,	208 pp. 40 cents
Second Year,	160 pp. 35 cents	Sixth Year,	240 pp. 45 cents
Third Year,	208 pp. 40 cents	Seventh Year,	240 pp. 45 cents
Fourth Year,	208 pp. 40 cents	Eighth Year,	240 pp. 45 cents

For the convenience of ungraded schools, and for all who may prefer them in such combined form, an edition corresponding to the ordinary five book series of school readers will be furnished as follows:

BALDWIN'S SCHOOL READERS—FIVE BOOK EDITION

First Year,	128 pages	25 cents
Second Year,	160 pages	35 cents
Third Year,	208 pages	40 cents
Combined Fourth and Fifth Years.	416 pages . .	60 cents
Combined Sixth and Seventh Years.	480 pages . .	65 cents

Copies of any of the above books will be sent, prepaid, on receipt of the price.

American Book Company

New York • Cincinnati • Chicago

Historical Readings for the Young

EGGLESTON'S STORIES OF GREAT AMERICANS FOR LITTLE AMERICANS

Cloth, 12mo. 159 pages. Illustrated . . . . 40 cents

This book of stories is designed for young pupils of the Second Reader Grade. Its primary aim is to provide reading lessons that will excite attention and give pleasure and thus make the difficult task of learning to read easier. Another purpose is to interest children at an early age in the history of our country by making them familiar with its great characters and leading events. This is most effectively done in this little book by entertaining and instructive stories which every American child ought to know, and by vivid descriptions of scenes and incidents which pertain very largely to the childhood of the great actors represented.

The numerous illustrations that accompany the text have all been planned with special reference to awakening the child's attention, and they add greatly to the lessons and purpose of the book.

EGGLESTON'S STORIES OF AMERICAN LIFE AND ADVENTURE

Cloth, 12mo. 214 pages. Illustrated . . . . 50 cents

This book, which is intended for the Third Reader Grade, includes reading matter that is intensely interesting to the young—stories of Indian life, of frontier peril and escape, of pioneer adventure and Revolutionary daring, of dangerous voyages, explorations, etc. With these are interspersed sketches of the homes and firesides, the dress and manners, the schools and amusements of the early colonial and pioneer periods. The stories of this book represent in a general way every section of our country and every period of its history.

Copies of the above books will be sent, prepaid, to any address on receipt of the price by the Publishers:

American Book Company

New York • Cincinnati • Chicago

Barnes's Natural Slant Penmanship

The system of writing represented in these new copy books combines all the advantages of the vertical with the speed and beauty of regular slant writing.

It is well known that an extreme slant tends to angularity, while vertical writing is usually slow and tends to an unsightly back-hand or irregular slant. If left to themselves, without specific directions, children naturally fall into a certain slant in writing,—intermediate between vertical and slant writing. This natural slant has been adopted as the standard in these copy books.

FORMS OF LETTERS.—Natural Slant copies are designed to be *written, not printed.* They have the simplicity and the full, round, open style of the best vertical forms, but avoid some of the extremes and eccentricities that have characterized that style of writing. In every instance the form of capital employed has been selected, first, because of its legibility; second, because of its ease of execution; and third, because of its graceful form. Every copy is *sensible and significant,* and as nearly as possible the subject matter relates to topics which interest the pupils of the grades for which the respective books are intended. In other words, the writing exercises are made to correlate with the other branches of study pursued in the schools.

THE SERIES includes Books A, B, C, and D, small size, illustrated, to be written with pen or pencil, and Books 1 to 8, full size, the first two books illustrated. A set of penmanship WALL CHARTS in four sheets is published to accompany this series of copy books.

BOOKS A, B, C, and D, per dozen	$0.60
BOOKS 1 to 8, per dozen	.75
CHARTS, per set of four sheets	1.50

Copies sent to any address, prepaid, on receipt of price.

American Book Company

'ork • Cincinnati • Chicago

RODDY'S GEOGRAPHIES

Roddy's Elementary Geography - - Price 50 Cents
Roddy's Complete Geography - - - - Price $1.00

By H. JUSTIN RODDY, M.S.
Department of Geography, First Pennsylvania State Normal School

THIS SERIES has been prepared to meet a distinct demand for new geographies which are thoroughly up to date and adapted for general use in ordinary schools rather than for a particular use in a highly specialized and organized ideal system.

They are distinctive in the following important particulars:

1. An adequate amount of material is included in each book to meet the needs of those grades for which it is designed.

2. The subject-matter is presented so simply that the pupil can readily understand it, and so logically that it can be easily taught by the average teacher.

3. Just enough physiography is included to develop the fundamental relations of geography and to animate and freshen the study without overloading it in this direction.

4. The simplicity of the older methods of teaching this subject is combined with just so much of the modern scientific methods of presentation as is thoroughly adapted to elementary grades.

5. The physical maps of the grand divisions are drawn to the same scale, thus enabling the pupils to form correct concepts of the relative size of countries.

6. The political and more detailed maps are not mere skeletons, giving only the names which are required by the text, but are full enough to serve all ordinary purposes for reference. In addition, they show the principal railroads and canals, the head of navigation on all important rivers, and the standard divisions of time.

7. The illustrations are new and fresh, reproduced mostly from photographs collected from all parts of the world with a view to helping out and explaining the text and not for mere embellishment.

8. To secure proper practice in map reading, formal map studies or questions have been inserted with each map, directing attention to the most important and essential features.

Correspondence regarding the examination and introduction of Roddy's Geographies is cordially invited and will receive prompt attention.

American Book Company

New York Cincinnati Chicago

McMaster's United States Histories

By JOHN BACH McMASTER

Professor of American History in the University of Pennsylvania.

PRIMARY HISTORY OF THE UNITED STATES. Cloth, 12mo, 254 pages. With maps and illustrations $0.60

SCHOOL HISTORY OF THE UNITED STATES. Half leather, 12mo, 519 pages. With maps and illustrations . . . 1.00

This series is marked by many original and superior features which will commend it alike to teachers, students, and general readers. The narratives form a word-picture of the great events and scenes of American history, told in such a way as to awaken enthusiasm in the study and make an indelible impression on the mind.

The **Primary History** contains work for one school year, and gives a good general knowledge of so much of our history as every American should learn; while for those who are to pursue the study further, it will lay a thorough foundation for subsequent work. It is short, and leaves unnoticed such questions as are beyond the understanding of children; in a simple and interesting style it affords a vigorous narrative of events and an accurate portrayal of the daily life and customs of the different periods; and it is well proportioned, touching on all matters of real importance for the elementary study of the founding and building of our country. Our history is grouped about a few central ideas, which are easily comprehended by children. The illustrations, which are numerous and attractive, are historically authentic, and show well-known scenes and incidents and the progress of civilization. The maps are remarkably clear and well executed, and give the location of every important place mentioned in the text.

In the **School History** from the beginning the attention of the student is directed to causes and results, and he is thus encouraged to follow the best methods of studying history as a connected growth of ideas and institutions, and not a bare compendium of facts and dates. Special prominence is given to the social, industrial, and economic development of the country, to the domestic life and institutions of the people, and to such topics as the growth of inventions, the highways of travel and commerce, and the progress of the people in art, science, and literature. The numerous maps give vivid impressions of the early voyages, explorations, and settlements, of the chief military campaigns, of the territorial growth of the country, and of its population at different periods, while the pictures on almost every page illustrate different phases in the civil and domestic life of the people.

Copies will be sent, prepaid, on receipt of the price by the Publishers:

American Book Company

New York • Cincinnati • Chicago

This textbook may be borrowed for two weeks, with the privilege of renewing it once. A fine of five cents a day is incurred by failure to return a book on the date when it is due.

The Education Library is open from 9 to 6.30 every week day except Saturday, when it closes at 4.

DUE DUE

MAY 22 1924

